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PROF. BENSON BIDWELL.

Who had his first lesson in electricity as messenger boy for the telegra
company at Toledo, Ohio, in 1847.

BENSON BIDWELL

INVENTOR OF THE TROLLEY CAR, ELECTRIC
FAN AND COLD MOTOR.

HISTORY OF EARLY STRUGGLES AND LATER SUCCESSES: WITH PERSONAL REMINISCENCES, LECTURES, ESSAYS AND LETTERS

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INTRODUCTION.

INTRODUCTION.

It is always pleasant to see the commercial success of a useful invention. It is a reminder of the law of compensation. The early struggles of the inventor are balanced by the affluence which crowns his later years. He has done much to lighten the burdens of the world. And the world is paying him for the service. Such an instance also affords proof that the laurels so fairly won are not, by some skillful perversion, laid on the brow of another by the admiring multitude.

A strong public sentiment should unite with the laws of the land to give honor and compensation to whom they are due, rather than to the imitator and the idea thief who win by trickery and simulation the applause that rightly belongs to another.

The world is full of examples of the real thing on the one hand and the imitation on the other.

The original inventor conceives the idea and works out the problems which for years baffle his efforts to make it practical, convinces the world of its need for his product, and after untold sacrifices finally moulds his idea into a commercial reality.

Then comes the imitator to reap where another has sown.

The law may not reach the defrauded inventor's case; but public sentiment should make infringement impossible and unprofitable if undertaken, thus encouraging invention and discovery by practical assurance of substantial support.

The name of Benson Bidwell stands among the most conspicuous inventors of our time. His name will ever be associated with the martyrs who have sacrificed both health and effort for the advancement of mechanical science and the welfare of the race. No man of the Nineteenth and Twentieth Centuries has contributed more generously to the general good or been of greater value to his country than he. As the inventor of the principles, elementary and complete, of the electric street railway system as it is today, he will ever be recognized as one of the great inventors of the world.

But while Benson Bidwell's achievements stand forth with exceeding prominence, he, like the majority of other inventors, through all the ages, was defrauded, for a time, at least, of the financial rewards he had so dearly earned. Others are reaping the benefits and enjoying the fruits of his labor; and, were it not for greed and injustice, there would have been no occasion for the litigation throughout America to restore to him and his heirs that which justly belonged to them.

Bidwell proved in a way that admits of no question that to him belonged the honor of having made the electric street railway system as we know it today—a practical, working success. His claim was true that he not only built and exhibited the first electric car in the history of the world, embodying the elements of a successful and practical street railway system, but that he applied for his patents thereon before the fundamental idea had ever practically suggested itself to others.

Furthermore, there has not been a single improvement in the principles of operating electric railways since the exhibition of the apparatus used by him on his first cars at the Philadelphia Electrical Exposition in 1884 and at the Boston Electrical Exposition in 1884 and 1885.

The *Electrical World* of July 20, 1907, stated that the trolley cars of the United States in 1906 earned three hundred and sixty million dollars ($360,000,000), in round numbers. The *Street Railway Journal* made a classification of earnings in five large classes, including 481 systems, and embracing practically every earner of any capacity, although, all told, there are not far short of one thousand of such roads or systems in the United States. It appears that 63 systems reported earnings of $275,245,206, and that the whole 481 reported $358,043,073.

We learned from reliable statistics that over four billion passengers rode on the trolley cars during the year. And all that mighty host enjoyed rapid transit at a cost of only one and a half cents a mile, on the average, while the cost of steam railway travel was about three cents a mile. Steam railway travel and freight traffic fell off by one half in some localities because of trolley competition.

We have learned from observation that, no matter how tired or weary persons are when going aboard the trolley car, especially in the summer months, the pleasure arising from the speed and rapid change of scene soon makes them happy and smiling.

Every human being has time to sell. That time may be represented by muscle or by brain effort. Yet that is all any human being has of value. Therefore, if he can save a fraction of that time every day by a quick means of transportation between his home and the place where he sells his time, the total sum of time saved in a year will prove of considerable value.

If it will require sixty minutes to carry him five miles by horse car, and the trolley car will carry him the same distance in thirty minutes, the trolley represents the saving of *fully one day in ten.*

If the man earns $2.00 a day, the use of the trolley in going to and from his work will save time worth $6.00 a month.

If one thousand persons use the trolley, as above set forth, means to them, in the abstract, a saving of $6,000 a month, o $72,000 a year.

The above statements give but a glimpse of what the trolley ca is doing for mankind all over the world. It has carried with universal prosperity and has been more of a help to business i the United States than any other invention to any country or race since the time of Adam.

If a man can make two blades of grass grow where but one grew before and thus become a blessing to his race, what position does the inventor of the trolley occupy when compared with ordinar men?

Reverend Dr. C. E. Jefferson, writing in the *Evangelist* on the question of Sunday travel on the trolley cars, gives his views as follows:

"Does the Sunday trolley car in large cities minister to the higher life of man?

"Undoubtedly it does.

"When several hundred thousand of human beings are crowded together on a few acres of land, many things become necessary which were not called for before. A new world is created. And the new world necessitates new forms of activity. It gives rise to new obligations and duties.

"I cannot understand how any man with a Christian heart can think it wrong for these pent-up thousands to escape to the country and parks on a Sunday afternoon.

"The Sunday trolley car ministers to the social life of our cities. The day of rest from the beginning has been pre-eminently a home day. Such it was among the Hebrews. And such it has been among all English-speaking peoples. It is a day for family reunions. It is a day when the married son and his wife can bring their children and take dinner with grandpa and grandma; when the daughter who lives on the other side of the city can come home and spend a few hours with her widowed mother; when sisters separated by the diameter of the city can come together for an afternoon; when the servant girl, chained all the week to her irksome work, can find relief and new life in the companionship of her mother and sisters in the old home.

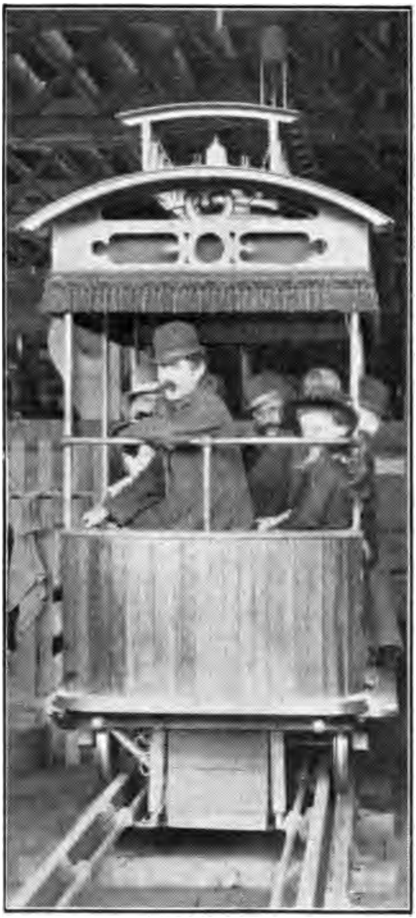
"The Sunday trolley car ministers to the spiritual life of cities. The problem of the down-town church is difficult at best. Stop the street cars, stop rapid and sure transit, as represented by our present day trolley, and the problem becomes well nigh hopeless."

In 1890, when the street railways were still very largely under a régime of horse and cable, their total income from all sources was $91,721,845. In 1902, when a considerable proportion had been converted to electrical methods, the gross income was $250,504,627, or just about $100,000,000 less than it was four years later. Thus the earnings have been growing at a compound rate of almost ten per cent yearly. To maintain such a growth for long would seem difficult, but there is no reason to believe that the near future years will show a falling away in the trolley railway's advance toward universal electrification.

THE EDITOR.

CHICAGO, September, 1907.

BIRTH OF THE TROLLEY SYSTEM.



FIRST TROLLEY CAR EVER RUN.

(Lighted and heated by the same current of electricity and having a polarity switch. Invented by Prof. Bidwell and exhibited at the Franklin Exposition in Philadelphia, September, 1884.)

PART I.

Birth of the Trolley System.

Fascinating Life Story of Prof. Benson Bidwell, One of the Successful Inventors of the Century—His Unparalleled Struggle Through Direst Poverty to Great Success—His Cold Motor the Triumph of His Life—How a Michigan Man Fought Against Fate to Make Railroads Run by Electricity.

This is the story of a travail, disheartening and discouraging in the extreme, through which a great idea was born.

It is the history of the founding of a commercial, industrial and social era.

It is the chronicle of one to whom we some day may build monuments as the only tribute remaining and adequate to so great a benefactor of his day and race.

It is the narrative of one who, without money, and almost friendless, save for the faithful few who were as poor as himself, still struggled on to polish his one lone talent. Who had deposited his all in the great Bank of Electricity, in the hope that it some day would prove to have grown to ten talents.

It is a story of wrongs not righted; of the crushing power of the modern Moloch of Wealth thrown against the single staying hand of a poor and unrecognized inventor.

It is a chronicle of the change in the methods of all street railway propulsion, which proved a Midas touch for hundreds,—yes, millions,—but which to the inventor was but the blight of India's famine sun, the ashes of despair on the lips of Faith, the dregs of disappointment in the pleasure cup so dearly earned by honest, enduring effort.

It is the history of Benson Bidwell, inventor of the trolley car system,—in its entirety, just as it now is, in successful operation the world over.

It is the annals authentic connected with the life and work of the man who conceived the railway car telephone system. A far-reaching invention destined to prevent and reduce to a minimum accidents in railroading, due to misplaced switches, lapses in dispatches, carelessness of operators, and other human error and crime now so inseparably connected therewith. A system by which the traveler may communicate with any person in any part of the telephonic world while on a railway train going at highest speed.

The story of "Benson Bidwell, Inventor," reads almost like a chapter from the Book of Fairyland,—a chapter wherein the demons of Chance and Mischance play shuttlecock and battledore with an enthusiasm far beyond the ordinary. For Bidwell's was an enthusiasm which through years fought with physical conditions such a battle as would have wrecked and stranded many another man on the rocks of Despair. It was an enthusiasm which whetted his ambition and determination to win out in the long struggle, to fight on till the greedy corporations who had denied him the fruits of his genius and toil should be made to disgorge their stolen millions and yield to him the place in the world he had so richly won for himself.

Benson Bidwell began his experiments in electricity in a small dark room, over his father's bakery, when he was a boy of fifteen years. Fortune, a few years before, quite by accident, had thrown him into the presence of Prof. S. F. B. Morse, inventor of the telegraph. Morse had gone to Adrian, Michigan, the then home of the baker's son, to lecture on his new invention. He had erected a short telegraph line in a hall and charged a small admission fee to those who desired to hear him explain the workings of this newest marvel under the sun.

Hears Professor Morse Lecture.

Among those who attended was young Bidwell. Volunteer members of the audience were requested to whisper messages into the ear of Prof. Morse, who transmitted them to the other end of the hall, where his assistant received and read them aloud. For months thereafter the people declared Morse to be a clever wizard, who had performed legerdemain they could not understand. They admitted that if the wire had been hollow the message could have been sent through it, but not otherwise. He was a bold man indeed who would stand against popular scorn and defend Morse's statement that the wire was solid and not hollow and that a natural but mysterious fluid was passed through it, which acted upon a receiving instrument at the opposite end and in such a manner as to convey intelligence.

But, notwithstanding the general incredulity of the public, Morse's lecture had taken a firm hold on the reason and imagination of young Bidwell. In his boyish mind he could see nothing of the great future of the telegraph, but it was a wonderfully interesting thing to him, and he wanted to experiment with it. Some four years later (in 1847) Bidwell became a resident of Toledo, Ohio, where his father had moved the family. Here he one day saw men erecting poles and stringing wires. Inquiry elicited the information that this was the Morse experiments "making good."

Secures Place as Messenger.

On that day was set ablaze the boundless enthusiasm in things electrical which never cooled in the mind and heart of Benson Bidwell. Before the sun had set he had gone to the office of the company and secured a position as messenger, that he might learn the secrets of this wonder-working mystery. He held that position for two years, when his father moved to Grand Rapids, Michigan, then a village of a few hundred in the pine forests, without railroads or telegraphs.

For ten years after moving to Grand Rapids, Bidwell was denied all connection with electricity in any form—mainly because of inaccessibility. But the enthusiasm which had been born in the boy's heart did not wane.

When his father moved the family to New York City, young Bidwell at once sought and gained admission to Prof. Draper's classes in philosophy and chemistry at Cooper Union institute. Here he began a series of experiments. Those experiments were secretly continued at home and ended in setting his father's bakeshop on fire by the emptying of the contents of a battery into a tin trough. This accident got him into trouble at home, and it also taught him a lesson he had not yet realized—that he was experimenting with a force of wonderful possibilities.

Conceives the Trolley Idea.

But such was the state of the electrical art at that period that many years elapsed before Bidwell conceived the idea (July 6, 1863) of running a train of cars by electricity. At that time his home was in Chicago, and he had grown to manhood. On that fateful afternoon, while sitting in the last coach of a railway train running into Chicago from Naperville, Illinois, whither he had gone on business, the great dream of the future, freighted with immeasurable benefactions to mankind and with the gold of Ophir, began to dawn upon his ever-active mind.

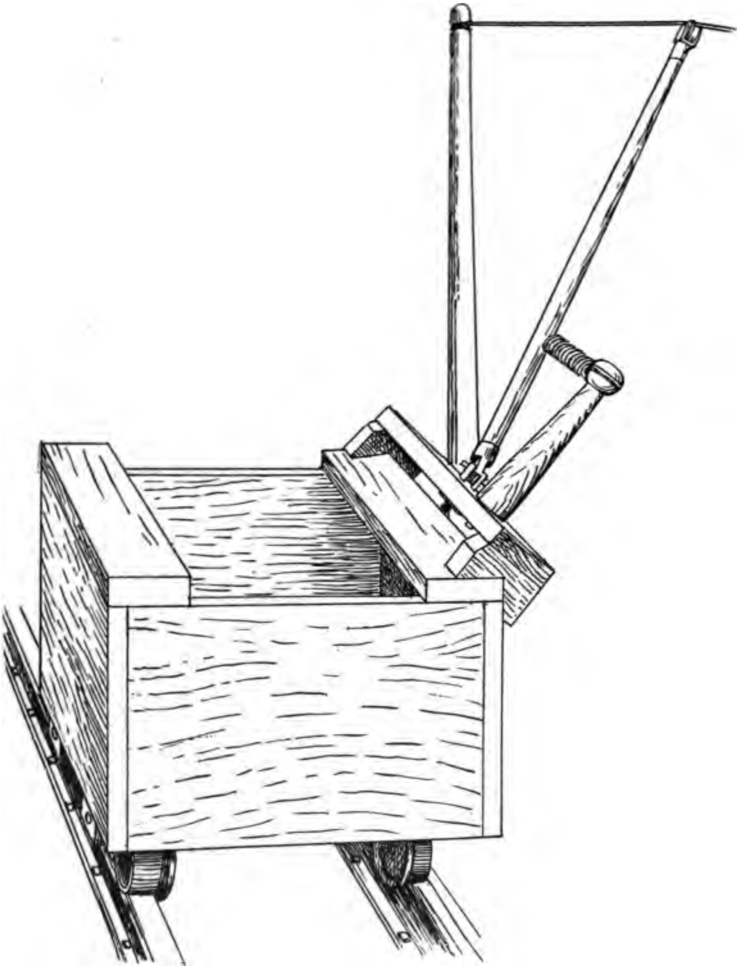
Bidwell sat in the slowly moving train and, half dreamily, followed with his eyes the telegraph lines along the track. All at once, though somewhat hazily, as though in a dream, he realized that a sufficient quantity of electricity could be sent along those wires to run a motor in a car. At once there came to his mind the great experiments which had been made in Paris, and one or two other cities, where, with a thousand batteries, scientists had made large arc lights to burn, and had advanced the theory,—somewhat indefinitely, it is true,—that machinery could be run by electric power.

Following these reflections came the recollection that (in 1845) scientists in Glasgow, Scotland, had propelled small cars by means of batteries placed in the cars. A like feat had been performed in Washington, D. C., in the same year, and in Philadelphia experiments of a similar nature had been tried in 1851. He had read of all these abortive trials, which had been both costly and impracticable.

But here, at last, in the mind of Benson Bidwell, was the germ of the successful idea which, properly developed, would grow into a revolution in the commercial, industrial and social world. In his lively imagination, he saw the finest steam locomotives consigned, eventually, to the "scrap heap," making way for the electrically driven engine. He saw space annihilated,—trains running on half time between New York and Chicago with the safety to be found in one's own parlor at home. He saw a system of alarms and warnings so complete that collisions and other disasters would be reduced to practically nothing.

The dream was so vast, superficially so founded on immeasurable impossibilities, so built up with comforts, pleasures and luxuries, so pinnacled with commercial triumphs and industrial rewards that had Bidwell not been prepared to fully grasp the problem which stood between him and the fruition of his conceptions, he undoubtedly would have been staggered and would have relinquished the idea in sheer despair.

For days the dream haunted him. At night he could not sleep. The spectre of Electricity,—brilliant, all potential, mysterious,—would not quit his bedroom. As the days and nights wore on to weeks, the conception grew and assumed more tangible shape. The lapse of a few months found him possessed,—mind, heart and soul,—with the tremendous project.



FIRST TROLLEY CAR MODEL.
(Built in 1868, when Bidwell lived in Bryan block, Grand Rapids, Mich., embodying original idea of 1863, and showing wire on side.)

Being a husband and a father, Bidwell had other matters to engross his attention. He was poor. The demands on his time and energy were urgent in other directions. He must earn a livelihood for his family. Notwithstanding this handicap, he never lost sight of the great work Destiny had apparently marked out for him. The time and thought he could devote to it were meager, but he never lost sight of the idea.

He Makes His First Model.

Bidwell studied, planned, and mapped until the year 1868, when he moved with his family back to Grand Rapids. Here, at a time when his health had failed and he was unable to work at anything else, he constructed his first small, cheap model.

That model was the embryo of the proud trolley car which today speeds through our streets, carrying its hundreds of thousands daily. It was the first tangible shape of the present system in use all over the world. It was the first crude expression of the idea later seized by the commercial world and by men with millions stolen and adapted.

That model showed the *trolley arm,* the *wheel,* the *pivot,* and the *trolley spring.* All were fitted to a miniature car, mounted on a rude board eight feet long. What a weakling babe to grow so quickly into the magnificent traveling parlors, half a hundred feet long, sweeping through our city streets today!

Other models followed this one, at as frequent intervals as the means and time of Bidwell would permit. At first he attempted to carry the electricity by means of a conductor between the rails, but this plan was soon abandoned, as were others which had proved equally impracticable.

But direst poverty now threatened to annul all his past results and future prospects. His ill health made it impossible for him to work in support of his family or to give much study or physical effort to the development of his idea. The gaunt spectre of Want had joined the spectre of Electricity; and the pair, side by side, dogged his steps and confronted him wherever he turned. At last, after a painful struggle between Genius and Duty, he decided to devote all his feeble energies to his beloved family, and, for the time, at least, forsake developing his grand conception.

The working out of his idea had gained over him such mastery that at times he could not resist the temptation to devote to it money sorely needed by his wife and children. In February, 1871, he collected a small debt due him. It was not a large sum, to be sure, but it would have purchased many necessities for his family. He used that money to hire the building of another model. His noble wife and good children did not complain but stood by him faithfully, believing in him and the great future of his invention.

Though Bidwell quickly regretted having yielded to the overpowering temptation leading to the deprivation of his dear ones at that time, it is a pleasing fact to relate that the model then constructed led to the solution of the entire problem,—which before had not been quite clear to the struggling inventor. He was now able to transfer currents of electricity directly from the wire to a motor on the car in sufficient quantity to propel it.

Scoffed at by Electricians.

While experimenting with this model, he easily foresaw that sufficient current could be generated and conveyed to run a car or any number of cars at any speed desired. Prominent electricians of that day, however, would not agree with his assertions. They admitted that his idea was all right for toy cars, but asserted that a pulley running on the under side of a wire had not enough contact to take off current in quantity necessary to propel full-sized street cars or railway coaches. In many scientific discussions they demonstrated, to their own satisfaction, but not to Bidwell's, that the inventor was trying to perform electrical impossibilities.

Turned Away by Pullman.

These disquisitions were wasted on Bidwell. He clung to his idea with unbounded faith. In April of 1871 he carried his latest model to Chicago and showed it to Albert Pullman of the Pullman Car Company. He hoped that Pullman would have the business acumen to finance the building of a car of sufficient size to indisputably demonstrate the full practicability of the invention. After careful investigation (but with little intelligence) Pullman declared there was money enough in the project for fifty millionaires if it should prove to be a success. But he added that he had no time to devote to the matter, his energies were so engrossed by his sleeping-car business.

Baffled in his hope of aid from Pullman, the tireless inventor returned to his home, to take up the struggle once more against adverse chance, disease and poverty.

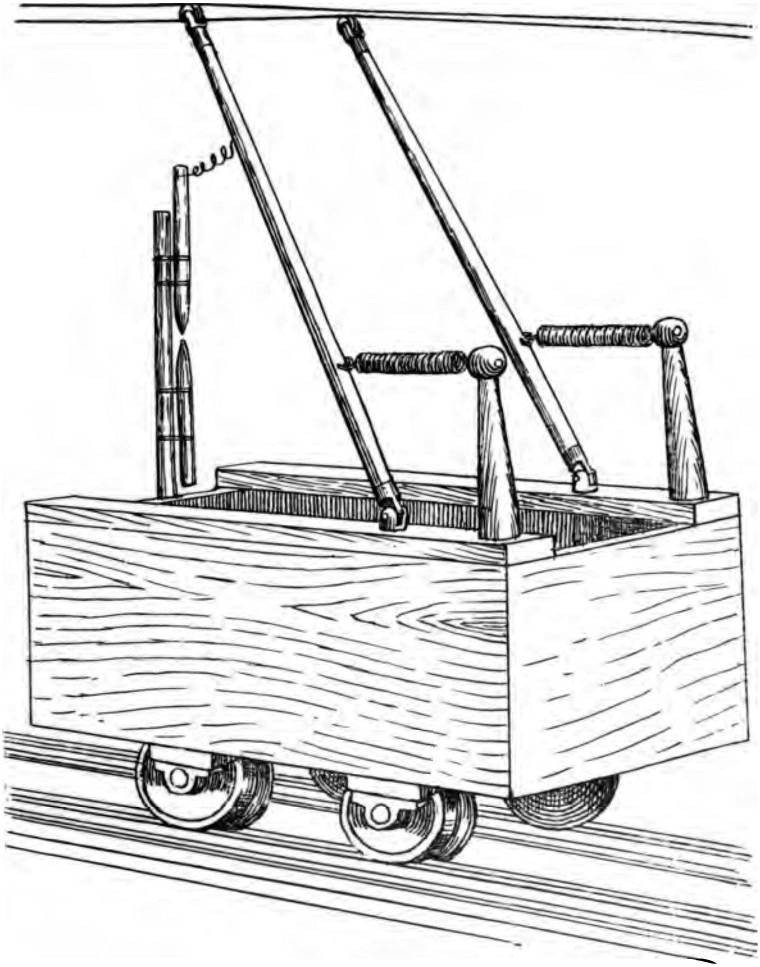
The Wolf of Want, no longer content to stand just outside the door, had taken up his permanent abode within the home, and was ill-tempered and insistent. The struggle of the Bidwell family for respectable existence was bitter and intense. The sick father saw these things with deep pain, but was unable to relieve the situation.

Lights a Car With Current.

In 1874 Bidwell moved to Indianapolis, Indiana. Here, at times, he felt so sure of early success that he even sold furniture out of his house as one of the means of getting money with which to construct models. He was attempting to cover every feature of his invention,—which was varied in its application. Four years passed. At the end of that period he had solved the problem of lighting a car with the same current that propelled it. Still little better than an invalid, two years more elapsed before he was able to build a car with a gearless motor.

In the winter of 1878-79, his health having somewhat improved, Bidwell undertook to emulate his illustrious compeer, Prof. Morse, by lecturing on the subject of his great invention. He hoped, by this means, to raise money for building, equipping and propelling a full-sized car. He also had half-formed hopes of meeting some man of wealth who would understand his invention and furnish large financial "backing." He advertised his lectures in several towns in Indiana and adopted every means then in vogue to make his projected tour a success. But he and his ideas were so far ahead of the general public—and even the most advanced electricians of that time—that he was looked upon as chimerical and a visionary. It is no marvel, therefore, that his audiences were small at the start and grew smaller as he progressed.

He carried with him two models of his trolley car, a sewing machine run by electricity, a cannon fired by electric current, and several other interesting devices. But all these, for some unaccountable reason, failed to convince the public of the practicability of his invention, though they enjoyed his exhibitions. The impression that he was an irresponsible visionary traveled rapidly and in advance of him,—so that, in some towns, he had no audiences



ANOTHER MODEL OF TROLLEY CAR.
(Showing Car Propelled and Lighted by One Current. Built about 1879.)

to speak of and was compelled to borrow money to pay transportation to the next lecturing point. On such occasions he sent his models and other apparatus by freight or express, C. O. D., trusting to Providence and good chance that he would be able to take the articles from the warehouse when needed.

Lecture Tour Is a Failure.

At Fort Wayne, Indiana, his audience was so small that the total box-office receipts were not enough to pay his hotel bill. The landlord accepted his overcoat and extra clothing as security for payment. On quitting one particular town (which is not named through courtesy to its inhabitants) he had only enough money to carry him a few miles on his way to the next stopping place. He threw himself on the generosity of the conductor of the train and humbly asked permission to continue on to his destination. He was told that the superintendent of the road was then on the train and would have to be seen about the matter. Bidwell told that official of his system to run cars and trains by electricity instead of steam, that he was lecturing on the subject, and, having run short of money, was desirous to get to the next town without further charge. The superintendent laughed heartily and replied that if he should pass all the "cranks" who wished to ride on his road free there would be nothing with which to pay dividends. Bidwell finally gave the conductor his watch (an inexpensive timepiece) as security for his fare. (This watch he never after was able to recover. The conductor insisted on keeping it as a memento of the trolley car inventor.)

It soon became plain to Bidwell that if he continued his lecture tour he would eventually be compelled to part with his precious models and other apparatus. Therefore, he borrowed money from a generous express agent and returned to Indianapolis.

Far from yielding to these untoward circumstances and becoming disheartened, Bidwell held his great enthusiasm undaunted. In the face of failure after failure he still pressed forward. It seems demonstrated by the almost universal history of the world that Poverty clings to Genius. But, alas! Genius has found this companionship anything but inspiring.

Bidwell set to work in another direction. Tom L. Johnson, a well-known politician and wealthy, then owned the street car lines of Indianapolis. It occurred to Bidwell that here was a promising field for experiment. Up to that time he had given little thought to the applying of electricity to the propelling of mere street cars.

This may appear remarkable to relate; but his mind had theretofore been so centered on the plan of replacing steam on the railroads that he had entirely overlooked the possibilities of replacing horses and cable ropes on the street car lines.

Fails to Win Tom Johnson.

Acting on his new idea, Bidwell sought out Johnson and laid his project before him. In several subsequent interviews he tried to interest the street car magnate, urging the replacing of his mules by electrical current. But Johnson, in his jovial, almost jocular manner, rebuffed the inventor, announcing his final decision in the matter as follows:

"First, there is not enough power in electricity to run cars.

"Second, electricity would cost too much.

"Third, the cars would be so light that the wheels would turn around but the cars would not run; and,

"Fourth, the best thing I know of to move a street car is to hitch on mules and have them take hold on the street with their feet and pull."

It is fair to Johnson to say that he could not patent the ideas thus advanced; for those same ideas were held by many others of Indianapolis' leading citizens.

In 1882 Bidwell learned that Grand Rapids, Michigan, had grown and advanced so rapidly of late that it was the best electrically lighted city in the West. He deduced from this fact that he could certainly find there some man of means who would be willing to help him give his trolley apparatus a fair test. Accordingly, he moved his family there. With the unvarying enthusiasm which had carried him thus far, and with Hope's beacon light still showing the way, he minutely explained his great invention to the street car owners and others prominent in business.

Thought Insane by the Ignorant.

But, unfortunately for his bright anticipations, one day, in an unguarded moment, he declared that he could run an electric car up Bridge street hill, a steep incline. This statement sounded like the babblings of a wild man to the common minds of that day, and he was at once set down as a visionary enthusiast. Thereafter his statements were seldom received with credence. Few persons of consequence could be brought to discuss his project. They had settled it in their own minds that, even if Bidwell's proposed car could be made to actually mount Bridge street hill, it could not be kept under control. That it could not be stopped or started while on the incline was patent to anybody, they argued. The hill was so steep that a car coming down it could not be held in check, and its own momentum would certainly cause a runaway and a wreck.

(It is almost ridiculous and unnecessary to state that electric cars have been plying up and down Bridge street hill for years.)

During nearly two years spent in Grand Rapids at that time Bidwell was offered but one slight encouragement in connection with his invention. President Hughart of the Grand Rapids and Indiana Railroad promised that if Bidwell would raise money to buy material for a large car the company's shops and workmen would be placed at his disposal for building it. Bidwell enlisted the aid of a prominent citizen; and every effort was made to get the necessary funds, but without success. So even this offer was of no use.

But the dauntless inventor was still hopeful. And he fought on, never giving up the struggle until he had witnessed the actual birth of a real trolley car, fully equipped and a commercial reality.

Success Arrives at Philadelphia.

The place of this birth was Philadelphia, in the year 1884. In that year, between March 1 and September 30, came the travail that brought forth an epoch in urban and rural transportation.

That was the time during which the first full-sized car was built and exhibited to the assembled scientists and electricians of the world and to the general public as well. The common people marveled and wondered, while the electricians rendered jealous acclaim and stinted applause.

But the living, moving fact was there,—before their eyes,—sensible to their touch,—tangible and a reality in every line.

It was here, in Philadelphia, during the Franklin Electrical Exposition of 1884, that was stolen what was more to Benson Bidwell than millions in money—his honored name as the inventor of the trolley system as it is today.

But Great Idea Is Stolen Later.

Notwithstanding that patents, covering the entire system, had been applied for (and since issued), and were in the name of Benson Bidwell alone, the idea of the trolley went abroad to the whole world, when visitors at that Exposition dispersed; and that idea soon became the property of any man with money to build the cars—and a conscience so dulled that he dared steal the patent-protected invention of another.

Bidwell was still comparatively poor; and he was unable to fight for his rights in the courts at that time. Those who thus pilfered his lifetime's work amassed millions. And those beneficiaries, far from sharing with him their gains, would not give him even the meager tribute of acknowledging him as the real father of their fraudulently amassed fortunes.

Deserves Fame, Still Unknown.

Bidwell, the pioneer, who had blazed the way and made the trail, within twelve years beheld the great trolley highway traveled monthly by eighty millions of happy and smiling men, women and children,—through the city's streets or over the rural routes, on pleasure or business bent; while not two hundred of them, perhaps, had ever heard his fame as the real inventor of the trolley,—passing him as a mere unit in a mass, unknown and uncared-for. His invention had furnished employment to more than two millions of men; but he himself barely had the necessaries of life, though deserving millions of dollars.

Genius and Poverty still were companions.

Having hastily followed the inventor to his triumphal advent at the Philadelphia Exposition, let us now go back and come over the ground again, more minutely scrutinizing the preliminary steps in his slow progress to final success.

It is the first of March, 1884. The raw winds of a leonine day sweep searchingly about the street corners of Grand Rapids. The sun not yet dares to give his sanction to the rising hopes of a near springtime. The snow still is piled in dirty heaps along the sidewalks.

We seek the home of Benson Bidwell.

We are looking for Genius. We are sure of Bidwell's right to this title, since Dean Swift, many years ago, wrote: "We might know him by this sign,—that the dunces are all in confederacy against him." And Swift was right.

The People Dub Him a "Crank."

We inquire for the genius and are mocked by the dunces who dub him "crank." We demand to see the "crank," and they point. There he is,—a man of forty-nine,—in the prime of life, as men ordinarily say.

Physicians have just told him that his stay with his family in this world is limited to a few short months, at most. When he is pointed out on this raw March day, many of the citizens of the town say they have frequently seen this man on the street, always quiet, unobtrusive, dressed very plainly, wearing side whiskers to fill out a face made somewhat sharp by the long struggle against disease. We approach, and look into eyes whose color we forget, unless we are trying to determine the color of an indomitable will, unalterable determination and unfaltering enthusiasm blended into one,—for these are what we see in the sockets where men are said to carry the lamps to their souls. Those eyes laugh with a mellow, steady light at the foolish pronouncement of the learned "pill men" who have predicted Bidwell's approaching end. Those doctors had evidently failed to note the firm lines of the set lips, that solid, prominent and aggressive chin, and the straight, determined nose.

There is a vague rumor about to the effect that this man has invented something,—few know exactly what. He has been better known as an organizer,—as his health would permit,—for two fraternal insurance organizations, and as a devoted member of the Methodist church in Grand Rapids.

He Determines to Reach East.

We follow him down a side street, then up a hillside, and watch him turn into a doorway. Here he enters his home. He announces to his family that he has just learned that an electrical exhibition is to be held in the city of Philadelphia, in September, and that he has decided to go there, and build and equip a large trolley car.

To his family of extraordinary devotion his decision comes as a surprise, and they try to dissuade him. But, since his mind is fully made up, their arguments fall against the winds. Taking what money he has out of his pocket, he gives it to his wife. She then reminds him that he has left himself not even enough with which to purchase a railroad ticket to the next station. In truth, he is penniless. But that is weighed in the scale of his determination and is found wanting. He will win the fortune he is conscious the world owes him.

His wife pleads his poor health, and prays him earnestly not to go away among strangers to pass the few remaining weeks of his life. But that plea only strengthens his determination to leave a complete and demonstrated trolley system behind,—a commercial legacy that will bring plenty—even luxury—to those who have suffered with him so many years.

His wife's entreaties prove of no avail. She patiently resigns her will to the merciful direction of a benevolent Providence, scarcely daring to hope for the best.

Quits His Home With a Dollar.

Bidwell packs up his belongings for the trip, not forgetting his most precious models. Affectionately kissing his wife and children good-bye, and with a prayer on his lips for their safe keeping until he shall return, the possessor of a fortune, he quits his home. Borrowing a dollar from a neighboring baker, he purchases a railway ticket to Ionia, Michigan.

This is the first stage in his final progress to inventive success.

A man of less courage, determination, enthusiasm, and faith would have hesitated—to count the cost. But to Bidwell, so possessed as he was with his idea, to go forth seemed like the command of Deity. Any hardship or privation to be encountered was not worth considering. When he remembered the condition of the family treasury at home and the learned opinions of the physicians on his physical condition, he believed that the holding of that electrical convention in Philadelphia was the direct intervention of Providence in his affairs. Here was his opportunity, at last to show the assembled electrical world the new revolution,—a system destined to change the whole aspect of travel and transportation. He looked forward with a hope that was transforming. A resolution that took hold of the deepest fibres of his being declared that he would *not* die and would *not* fail.

The legend on Bidwell's ticket read: "One first-class fare from Grand Rapids to Ionia."

Pawns a Valise for His Fare.

Railroads were very literal in their interpretation of such legends in that day. And Bidwell had previously had several opportunities to learn that fact. When he arrived at Ionia he opened negotiations which resulted in the conductor's accepting his valise as security for the fare to Detroit. In the settlement of the account at that city the pound of flesh was exacted. In Detroit he found work which paid his expenses and left over enough for a ticket to Toledo.

In Toledo he could find nothing to do. He vainly tramped the streets for a time and finally began "counting ties" on his way to Cleveland. Better fortune awaited in that city. For there he was able to earn enough to clear the road to Pittsburg. Another bit of good fortune in Pittsburg put him into the honest possession of a ticket to Cumberland, Maryland. After some discouraging experiences here, he finally succeeded in enlisting the sympathy of a conductor who took great interest in his invention and agreed to carry him free to Washington, D. C.

Gets Two Dollars at the Capital.

Doorkeeper Page of the United States Senate, a resident of Grand Rapids, lent Bidwell the two dollars necessary to pay his way to Baltimore, from which point he induced the conductor to accept his overcoat as security for his fare to Philadelphia.

That Unseen Destiny which was shaping Bidwell's ends led him in Philadelphia to the Osborn Hotel on Arch street, near Fourth. Here the generous proprietress, Mrs. Osborn, extended the hospitality of her hostelry to the inventor until such time as he should be able to pay. She also advanced the money necessary for redeeming his overcoat.

The problem which next presented itself—where to get the money with which to build and equip the trolley car—worried Bidwell for days and nights. Naturally, he thought that the large electric manufacturing companies of the city should be the first to be interested in such a scheme, and he applied to them.

Evolves Plan for Heating.

By this time he had evolved a plan by which he could heat his car as well as propel and light it by the same current. But when he stated to the manager of the largest electrical concern (which had been engaged in the making of electrical apparatus for twenty-five years) that he could propel, heat and light a car by the same current, he was looked at askance. Sundry winks were exchanged between those present in the office. Here was a "crank" indeed, they thought, and a rare one. He talked clearly enough and seemed to understand his proposition, but his proposition was a joke. Such a thing was impossible. And Bidwell was dismissed with a few pleasantries, as one not worth the time he was taking.

Seeks Money to Build First Car.

Each of the other electrical establishments was visited in its order. At each Bidwell received treatment similar in result. Not a man in any one of the factories would take even mental stock in the vagaries of this "crank." For the most part his scheme was the subject of much gentle banter and good natured raillery. The acknowledged experts of the day were prepared to prove the impossibility of using electricity in any such way, because, as they averred, the current *could not be subdivided.* They forgot that Edison had met this same objection and had overcome it when he first introduced his incandescent lights.

For six weeks Bidwell besieged the electrical works and offices, in the hope of a chance to discuss the principles of his invention with some competent man. Finally, he was compelled to give up this task and try some other tack.

For weeks the pathway ahead grew darker and more uncertain. He hawked his plans about from one man of influence and wealth to another; but they invariably pointed to the manufacturers of electrical apparatus as the men who should be most interested. The weeks were flying rapidly, and not a sign appeared in the sky which augured hope for the inventor.

Friend Tells of a Promoter.

But when he had reached the darkest hour of his undismayed search there appeared one small ray of sunshine. An acquaintance told him that he had read an advertisement in a newspaper to the effect that a certain promoter had set aside a sum of money for the development of some good electrical invention. The persevering and undaunted inventor was led to a wealthy commission merchant of the city.

The merchant was careful and cautious. He had the money, and, at first sight, put faith in the great invention. But before he would agree to sign a contract to furnish the twenty-five hundred dollars needed he asked time to consult the electrical manufacturers of the city. The manufacturers laughed at him and said that if he put any faith in that "Western crank" and was fool enough to put his money into such a scheme, he ought to lose every cent. This frightened him, and he stopped the negotiations. But he had failed to reckon with the persistence of the inventor.

Small Sum Is Advanced Him.

Bidwell now knew that the merchant possessed the money and had the inclination to develop something along his line. There was no such word in Bidwell's lexicon as "fail." He believed that diplomacy and proofs of the right kind would make this merchant change his decision. He set up his models and explained in detail all the principles involved, and thus showed the merchant the probability of success. In this way he finally induced the merchant to advance money enough to build fifty feet of track.

When the commission man saw the model running up and down this track he, to a certain extent, was convinced. Then Bidwell proposed that he build a larger car and longer track,—a system that would carry a child. Consent was gained for this project.

Constructs His First Small Car.

Bidwell now built a diminutive car, only twenty by thirty inches in size, and put on a small electric motor and two incandescent lights, supported by two poles at the front end. This he ran, heavily laden, up and down, at will, over another fifty feet of track with a two horse-power dynamo, the one current propelling the car and lighting both the car and the private exhibition room.

Bidwell made thorough tests of all kinds of contact on the wires. This settled the question of the small wheel contact, though several electricians had told him that so narrow a contact would not furnish enough current to do the work. It also proved the disputed point concerning the burning of lights on the same current, which electricians had said would be impossible.

The financier was greatly pleased with the experiment and at once advanced the money to build a large car and adequate trackage.

Imagine a man whose whole being is concentrated in enthusiasm. Mix and temper this with hardship, privation and disease. Hang above his head the appalling figure of approaching death, like the sword of Damocles. Then paint a face set like flint toward the goal of his life's ambition. And you may conceive but a faint idea of the zeal and energy with which Benson Bidwell overcame his infirmities in his fiery determination now to succeed.

He at once began a veritable race with Death. With a broken down nervous system, he worked with feverish impatience. Not a doubt broke the serenity of his confidence. For twenty years, in his vivid imagination, he had seen this first car running successfully. And, now, he had but to drive the last nail, screw up the bolts here and there,—and his dream would be realized. So absolute was Bidwell in his confidence and so eager for the finish that his patience broke quickly in a storm at the slightest hindering suggestion from the expert workmen employed to assist him.

While, figuratively, a physician was holding his pulse and watching his gait in the short home stretch of his last race, the inventor worked in mad haste,—all through the hot summer months.

Finishes Full Size Trolley.

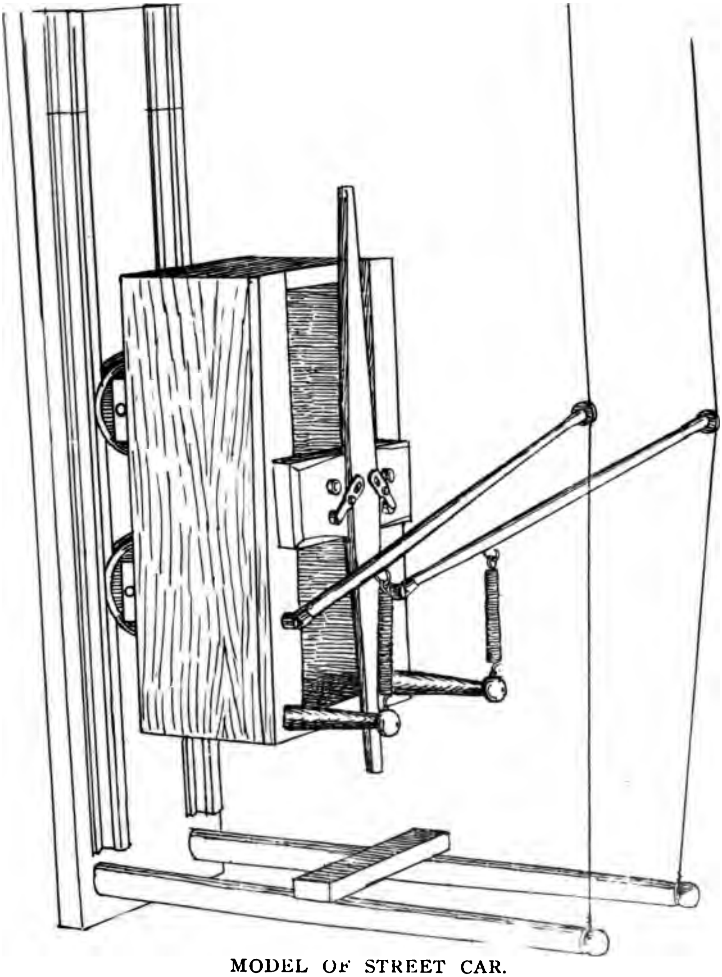
In a seventy-foot upper room at 1017 Filbert street, on September 1, he realized the fulfillment of his long dream.

The trolley car was finished at four o'clock in the afternoon of that day.

It was four and a half feet by ten feet in size, and it carried twelve incandescent lamps and would accommodate sixteen passengers.

Immediately the inventor dismissed his assistants and connected the wires. Then, for the first time in history, a trolley car was successfully propelled.

And over one hundred thousand trolley cars now running in America and other thousands in operation in all parts of the world, including Siam, China, India, Japan, and parts of Africa, are without a change in principle or application from those used in running that first car in that upper room in Philadelphia, September 1, 1884.



MODEL OF STREET CAR.
(Showing Two Trolleys.)

This fact bears indisputable evidence to Bidwell's thoroughness and completeness in the preparation of his wonderful invention.

Thus was born into the world one of the two greater benefactions of modern times,—the telegraph being the other.

The one annihilated time and space in the air, while the other has annihilated time and space on the solid earth.

The names of Morse and Bidwell, side by side, shall forever resound down the corridors of time.

There were now pleasant days ahead for Bidwell, days in which the electrical world acknowledged the great triumph of the inventor. But it was only a burst of sunshine through a temporary break in the storm clouds.

Lamps for Car Are Denied Him.

When the car had been moved to the Franklin Exposition grounds (the electrical exposition) and put in running order, Bidwell applied to the Edison Company for incandescent lamps with which to light it. After several days delay, the lamps were refused, on the ground that the current used to run the car could not be divided, for application to the lights, and that to let Bidwell have lamps for a purpose predestined to failure would injure the reputation of the Edison Company.

This refusal had followed a decision by the court of last resort, the electricians at the Exposition, that it was impossible to run a car and light it by the same current. Those wise men had sat in solemn conclave in Bidwell's own car while declaring their decision.

But this decision and refusal would not be accepted by the inventor, who lost his wonderful patience and temper and demanded the lamps with such vehemence that they were finally sold to him, to put an end to the annoyance and prevent more serious trouble, as the superintendent of the Edison Company said.

Trolley Becomes the Chief Magnet.

From that time forward, throughout the entire Exposition period, the "Bidwell Electric Trolley Car" was the chief attraction on the grounds. It drew tremendous crowds. President Bullock of the Exposition came to Bidwell and told him that the trolley car was drawing more visitors than all the other exhibits combined. And President Bullock exceedingly regretted that he had not set aside several hundred feet of space, instead of only one hundred, for the greatest attraction.

The car ran smoothly and perfectly, back and forth, and carried eleven incandescent lights on the same current used to run the car. Five arc lights, in addition, were mounted on poles at the side of the track. And all were fed from the same electrical current.

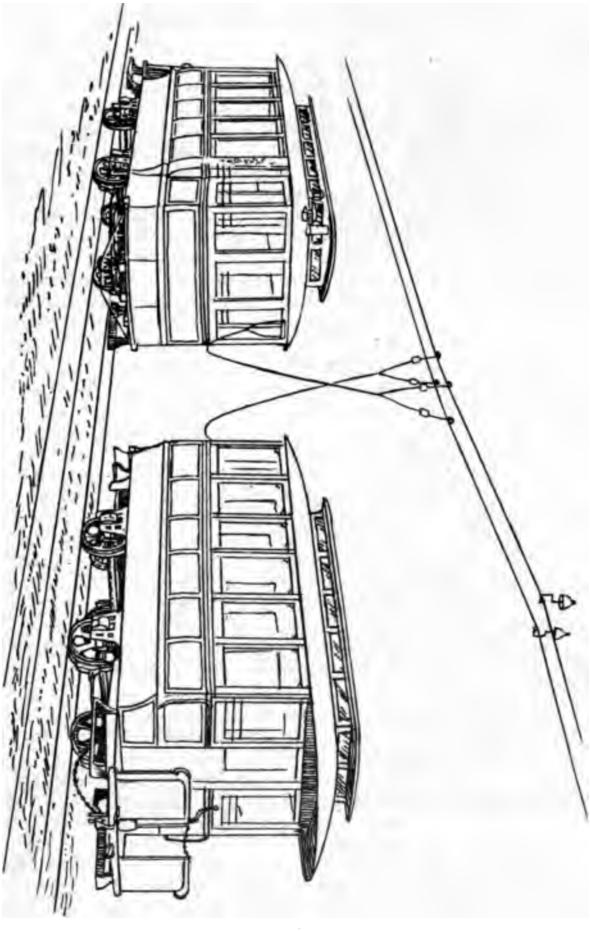
Thomas Edison, who was attending the exposition, rode on the car and warmly congratulated the inventor on his pronounced success. Edison was followed by numerous other well-known inventors and electricians.

The United States Government had invited electricians from all over the world to attend this Exposition for the purpose of fixing upon uniform terms, measurements and electrical units by which intelligible contracts could be made and enforced. This international congress included among its members such eminent electricians as Prof. Sylvanus Thompson, Prof. Forbes and Prof. Meese—all of London, the last being superintendent of the British telegraph system.

All of those gentlemen examined and rode on Bidwell's car and expressed great pleasure at witnessing the propelling of a car lighted and heated by the same current.

Is Inspected by Many Inventors.

Many American electricians and inventors visited the car, among them Inventor Daft of New York and Vanderpoele of Chicago, another inventor. Inventor Griscom, of electric railway reputation, was there. He had secured the right from the City of Philadelphia to lay forty rods of track in the street alongside the Exposition building on which to run a car carrying an electric motor. He conducted his



OLD VANDERPOELE SYSTEM.

(Showing trolley wheels on top of wires.)

current through the rails, one being positive, the other negative. He tried to run his car a few times; but it was soon stopped by the city authorities, because the current in the rails was so exposed that it was a public menace. Several persons had been knocked down when coming in contact with the rails before the exhibit was removed.

No such objections could be urged against the Bidwell car. It ran with perfect safety to everybody. Thus was it demonstrated to the electrical world that Benson Bidwell was a successful inventor.

These were the pleasant days.

Visitors crowded about the car and marveled at the wonder. But, while popular favor was thus accorded, many of the "wiseacres" shook their heads solemnly. And there appeared nowhere in the throng which daily gathered a single soul who would agree to take any financial stock in the enterprise. Electricians, prejudiced, largely through jealousy, said the trolley car was a toy. And timid Capital, mimicking the croakings of these self-constituted sages, stood aloof from Bidwell and his car.

One Quiet Man Taking Notes.

But there was *one* man at the Exposition who early saw the commercial possibilities, though he did not then divulge his views regarding the trolley car. That man repeatedly visited, rode on and studied the car; and he finally carried away in his head (if not on drawings in his pocket) the principles and plans of the new car. He had very little to say to the inventor. Ostensibly he was at the Exposition to exhibit electrical apparatus of his own; but he gave little time to his own exhibit after he discovered Bidwell's trolley car. In truth, his own exhibit attracted little attention. No crowds gathered about his space; therefore, he appeared satisfied to join the crowds where they did congregate—around Bidwell's allotted ground.

When in the vicinity of Bidwell's car this man observed to one leading purpose, though he did not betray his unusual interest. Never too conspicuous, though often present when the inventor explained the working of the new machine, he followed the course of lectures to the end of the Exposition.

Then that keen observer went to Richmond, Virginia. He slipped away unsuspected and almost unnoticed. But so important was he in the after affairs of the inventor that he is alluded to in another connection.

It is enough to say here that the *first trolley street railway,* equipped with *trolley cars,* was *built* and *operated* in *Richmond, Virginia* and that mysterious stranger promoted it.

Builds Two Cars in Boston Town.

The exhibition of Bidwell's trolley car had been such a success at the Philadelphia Franklin Electrical Exposition that the managers of an exposition soon to be held in Boston (December, 1884) made a proposition to Bidwell to put a track on the second floor of the exposition building and run his cars there. The proposition was accepted, and the track was laid around the parallelogram shaped building, with curves at each end, to make a continuous track.

Two cars were built,—of the ordinary street car size,—one to be used as a motor car and the other as trailer. Each was equipped with *sixteen incandescent lamps;* and the motor car had an ***open iron grate in the floor,*** under which was placed ***coils for heating the car.*** The entire apparatus was run by one dynamo, located in the power-house of the Weston Company, about a mile from the Exposition building.

This was the first time in history that electric power was transmitted so long a distance for ***lighting, heating*** and ***propelling*** a car.

The marked success which had attended the exhibition of the car in Philadelphia was repeated in Boston. The cars were advertised extensively and visitors came to Boston from all over New England to see the wonderful cars and ride on them.

He Falls Sick From Overwork.

But while Success, at last, was smiling on this ardent wooer, that stern and unyielding foe, Disease, which had so unremittingly pursued him, discovered a weak spot in his armor of determination and will. Quick to seize any advantage, it sent him to his bed, where he lay during most of the Boston Exposition, too sick to attend to the ordinary affairs of his business and compelled to leave all to the care of a daughter, whom he had in the meantime brought to Boston.

As an outcome of this misfortune, no one was found who would interest himself financially in the construction of the trolley street railway.

Sickness, however, but caused Bidwell to take a renewed grip on his determination. He would not give up. Success had crowned his mechanical efforts; but he had discovered that he still had another world to conquer. He must convince the ***financial world*** that he had something of interest. He took a new hold on life. He would ***not*** die. He must ***not*** yield, for there was the family back in Grand Rapids, still unprovided for.

Cults and sciences of healing have been founded on such determination as Bidwell's not to yield to sickness and death; but they did not enter the problem with him. He had one overpowering ambition. It was to succeed in making the electric railway an assured thing, and through this means to place his family beyond want. Everything else must yield to this one ambition.

Philosophers have said that if you know where you are going, the world will step aside and let you pass. The world, at last, had let this indefatigable inventor pass on to the *mechanical* success he had achieved; but it now seemed to cross his path at every point and push and jostle him aside on the road to *financial* success.

Disease and Poverty had fought him for years; and they, too, seemed determined that he should never enjoy wealth.

Though Benson Bidwell knew where he was going, he could not pass. So it appeared; and the seers' wise proverb had proven false for the once, at least.

Moves Cars and Track to Detroit.

At the close of the Boston Exposition Bidwell moved his cars and track to Detroit. During the summer of 1885 he operated them in that city with success so far as their mechanical movements extended. Hundreds rode on them, and thousands wondered. But when he tried to induce the street railway men of the city to equip a line with his system they thought him a "crank," and some even suspected him of trying to swindle them. They would have nothing to do with such a mysterious thing as the trolley car.

Bidwell ran his cars until he got entirely out of money; then he journeyed on a steamboat to Cleveland, where he went hoping to induce capitalists to come to Detroit and examine the cars. For a time Fortune seemed to smile upon this effort. Three prominent capitalists went back to Detroit with him and rode on his cars till they were much impressed that they would prove practicable. As a result of this favorable impression they agreed, verbally, to furnish a hundred thousand dollars for the equipment of a short line in Cleveland, as a beginning.

An Unfortunate Accident Occurs.

The party were about to quit the cars to go to an attorney's office to conclude the contract when one of the Cleveland gentlemen remarked that he was not quite satisfied and would like just one more ride around the 600-foot track, which was laid in oval shape with a heavy grade at one point. To accommodate that particular gentleman, all the party were given one more turn around the oval. In climbing the grade one of the car axles, defectively made, broke and stopped the car.

This was a most unfortunate accident at that juncture. For it raised doubts in the minds of the prospective promoters.

Bidwell explained that the break was in no way chargeable to electricity, and that he could easily put in a new axle. But the Cleveland capitalists were skeptical. After a very short private conversation among themselves, the visitors decided to have nothing more to do with Bidwell's trolley car.

The force of this decision fell like a stunning blow upon the inventor. Sick, moneyless, and discouraged, he went to his home in Grand Rapids and sought retirement.

Again Balked by Ignorance.

After a rest of a few months, Bidwell resolved to make one more effort. He somehow secured money to pay transportation on his cars and the trackage from Detroit to Chicago. Here after long search, he found a man who said he would furnish fifty thousand dollars to construct a short trolley line if his attorneys should give him a favorable report of the invention. The inventor handed over all his papers and documents to the attorneys and they began an investigation. Their decision was:

"Cars cannot be run successfully by electricity; and any man who puts money into the building and equipment of a trolley street railway will lose it."

One of those *wise* attorneys was later a candidate for the office of Commissioner of Patents.

Becomes Peddler to Seek Backing.

For a time this reverse stopped all Bidwell's efforts in Chicago. His health having improved a trifle, he started out with a small pack as a peddler. He carried in his pack the little appreciated (but to himself priceless) photographs of his Philadelphia and Boston trolley cars. And in every town visited he tried to interest street railway men in his invention. He passed through Sterling, Ill., Rockford, Ill., Dubuque, Ia., and Iowa City. He visited a number of other towns between Iowa City and Valparaiso, Ind., though it was with difficulty that he kept on his feet, so poor was his health.

While in Valparaiso, sick, exhausted in both body and soul, and having but a silver quarter and a copper two-cent piece in his pocket, he dragged himself to church one Sunday morning. When the contribution box was passed, he reached into his pocket for the two-cent piece, but in its stead he brought up the quarter. Feeling that an all-wise Providence had directed his hand, he dropped the quarter into the box.

On the following day he was able to sell several dollars worth of goods from his pack; and with the proceeds he made his way back to his home in Grand Rapids.

In every direction Bidwell had turned for aid, though the sun might shine for a time, paint the clouds with silver and bathe the landscape with golden sheen, at the last lowering skies had loomed on the far horizon. His supreme faith in his own genius and sublime hope in ultimate triumph had made those temporary sunrays a lure to him. He had pushed on toward them with a confidence almost childlike in its simplicity and earnestness. But at the end, he had found only a mirage, dissolving in thin air,—a mingling of sunshine and rainbow hues that ever eluded his outstretched hands.

But the most decisive and disheartening stroke was yet to be received by Bidwell. In the spring of 1887 he laid a trolley track on the lake front in Chicago. Here he ran his cars all summer, in the meantime trying to induce C. B. Holmes, president of a South Side street railway company, and Charles T. Yerkes, president of a North Side street railway company, to equip a line with trolley cars—to afford a more extended demonstration. But those gentlemen temporized and hesitated until late in the autumn.

Gets His First Stunning Blow.

One day Bidwell asked Yerkes what his final decision was to be. Yerkes replied that he saw no reason why **he** should put up the money to equip a road when he **had received an offer from parties in the East to equip a line for him at their own expense** and make no charge for it until it should have proven a success.

This announcement came to Bidwell as a stunning surprise, and for the moment he was quite unable to grasp its full import.

Gradually the real state of facts was unfolded to his astonished understanding.

Then, for the first time, he beheld the spectres of Theft and Piracy looming large and powerful, casting a deathly shadow on his future prospects.

While he pondered his mind traveled back to the Philadelphia Electrical Exposition.

In memory he saw a quiet and unassuming man moving about among the crowds around his trolley car exhibit.

Was not this the man who had a queer motor in which nobody was interested? Was not he the man who had so silently drifted with the crowds around Bidwell's cars when the inventor was explaining their methods of working and principles of electrical application.

Yes, he was the man.

That close student of Bidwell's invention had drifted as quietly off to Richmond, Virginia, and, surrounding himself with capitalists, had built an electric street railway line, using Bidwell's patented principles and application without let or hindrance or saying "By your leave."

His Idea Stolen and Hopes Flown.

In cases like this the inventor's first thought, naturally, is to secure an injunction from the courts prohibiting the use of his patented ideas. But here fell the last and heaviest of all the blows in Bidwell's hard experience.

No such injunction could be issued.

Other poor inventors had learned to their sorrow in their appeals to the Supreme Court of the United States that where an inventor is not able to manufacture and market the article patented the public shall not be deprived of the benefit of the idea. Anyone who wishes may make the thing, and the inventor holding the patent must bring suit to enforce payment of royalties.

Immediately after the building of the car line in Richmond, Virginia, other companies were quick to seize upon the idea and trolley railways multiplied like mushrooms.

Detroit, Appleton City, Toledo, and a number of other small cities east of the Mississippi River soon boasted of electric railways. And other cities fell rapidly into line.

All those trolley street railways were direct infringements on the Bidwell patents which cover all the principles.

Prepares to Fight Fraud.

The inventor resolved to enforce his rights. For the next few years, with health broken, but with purpose and will undiminished in force, he was a very busy man indeed. The time for seeking some one to finance his invention having now passed, he must raise money to bring suits for infringement of his patents. Along with his efforts in this direction came a proposition from Newark, Ohio, to build and equip a trolley line if he would assist in raising the money. Bidwell went to Newark and after six months hard work succeeded in completing a subscription of twenty-five thousand dollars. But when collection of those subscriptions was attempted most of the subscribers refused to pay; and it would have cost too much to enforce payment.

Under the disappointments attending this latest failure Bidwell's health again broke, and he was compelled to go with his wife to Valparaiso, Indiana, and make his home with a daughter.

Eventually suits were filed at various points, to collect royalties. Settlements were made on an equitable basis; and everything seemed to be proceeding well.

Millions Are Against Him.

But a suit filed at St. Paul upset all Bidwell's bright anticipations. While negotiations for settlement were pending there the General Electric Company, a powerful corporation, requested that no settlements with Bidwell be made, volunteering to defend with its millions all suits thereafter filed by Bidwell's attorneys on the grounds of infringement.

To this time some thirty thousand dollars had been collected in settlements. And all of that money was spent in the unequal contest with the great electric company.

This looked like the end. The great invention had been stolen, and its increment had been apportioned throughout the world. No avenue seemed left open to the inventor leading toward financial success. He might bring more suits; but he had little money, and the arm of his opponent was millions of dollars long.

He Invents the Cold Generator.

Enfeebled in body beyond all physical ability to earn a livelihood, but with the old fires of hope still burning, Bidwell fought on. Robbed of one invention, his active mind devoted itself to the solution of other great problems in electricity. After a time he perfected what he believed to be the final necessity in the great system to which he had devoted his life—a capstone to the edifice.

It was the cold motor or generator.

This was a machine to cheapen the cost of electricity and to prevent motors from burning out—commonly called "short circuiting."

With this latest invention in hand, he faced the same old problem. He traveled again the old trail of bloody footprints. He met the same misunderstanding, the same prejudice. Again he faced blind ignorance, and was given grudging praise.

So-called expert electricians once more sat in solemn conclave and pronounced against this latest impossible thing that Bidwell's genius had brought forth. And they did this, with his other great invention even then in full and successful operation all over the land.

Bidwell showed those learned men a generator which would feed fifty lights though made for only twenty-five—and that at no extra cost. But they still were doubting Thomases.

Again Bidwell beheld the picture of the future, bright with this new benefaction. Again he foresaw financial success for himself and plenty—even luxury—for his family.

And the picture was true. It was no mirage this time.

At three score and ten, assisted by his son, Charles F. Bidwell, he promoted, financed and organized the Bidwell Electric Company. With offices in Chicago and manufacturing plant in a suburban town, he began the making of his latest invention.

The cold motor (or generator) proved a success. Other apparatus was added to the list of articles made; and the factory prospered.

BIDWELL'S OWN STORY OF TRIALS AND TRIUMPHS.

PART II.

Bidwell's Own Story of Trials and Triumphs.

Set Thinking by a Sermon.

In the spring of 1863 Bishop Simpson preached in the Clark Street Methodist church at Chicago. Among other things, to illustrate his sermon, he spoke of the recent discoveries in France and said that by using a thousand electric batteries scientists had generated an electric current that would melt iron, and that it was thought sufficient current could be generated to run machinery with electric motors. (Motors had been invented and used in a small way as far back as 1837 and run by electric batteries, but it was not discovered until 1873, by Gramme in Paris, that these motors would generate electricity.)

TROLLEY CAR USED AT BOSTON ELECTRICAL EXPOSITION.
(Showing Prof. and Mrs. Bidwell in rear seat of car.)

The remarks by Bishop Simpson made a deep impression on my mind; and, as I found time, I thought on the possibilities in the future of the application of electricity.

On the 5th day of July, 1863, I went to Naperville, thirty miles west of Chicago. Naperville was then seven miles from the nearest railway station, and a stage coach met the passengers. I started on my return to Chicago the following day, July 6th. It was one of those beautiful, dreamy days; and, without any special thought, I entered the last car and sat in the end seat which faced the end window, looking out upon the waving prairie grass, intermingled with various colored wild flowers. My mind seemed entranced, and I dreamed day dreams, seeing the rails, ties and telegraph poles fleeing away from us. As I gazed the words of Bishop Simpson came to my mind until the undefinable thought formed that if I could lead a current from the wire to a motor on the car why not run the car with this remarkable power the Bishop had outlined. With it came the suggestion that a pole held by a pivot on the car and controlled by a spiral spring would allow a wheel to run under the wire.

Earning a living for my family at this time kept me busy, and I do not remember that I did anything farther about it until my failing health, as well as that of my wife, made it desirable that we move away from Chicago.

In 1868 we were back in Grand Rapids, where we both improved in health and where I built the first model with overhead wires. I used a plank 8 or 10 feet long, putting stakes at each end. I stretched two trolley wires over it. I do not recollect all I did at that time, for my first duty had always been to provide for my family up to this time.

Seeing a better opportunity for business in South Bend, Indiana, we soon moved to that city. Here I built my second model. I do not know whether I am sorry to say it or not, but I became so infatuated by my invention in the following years, that I used money for models that ought to have been used for my family. A debtor had paid me $10 for legal services (I had studied and begun practicing law), on one occasion; and, knowing it would last but a day in defraying household expenses, I went and had a small model made, not knowing when I would receive so large a sum again.

In April, 1871, I carried my model to Albert Pullman of the Pullman Palace Car Company, of Chicago, but failed to interest him. Mr. Pullman said he could see fortunes in the idea for fifty men, but that his time and attention were too fully occupied with other things to permit his taking hold of it.

Wife Comes Near Dying.

In 1873 my wife was taken down with an attack of pneumonia and with typhoid fever. She was sick in bed sixty days. In that time I left the house but one or two days. The last time, when I returned, I found the hired nurse and several neighboring women crying. I asked what the matter was. They said Mrs. Bidwell was dying. It made me angry. I said:

"Why do you not rouse her and rub her, to keep the blood circulating?"

I ordered them all out but the nurse and roused her; and, with rubbing, soon revived her. If I had been half of an hour later, she would have been dead. The nurse got angry and said that I thought my wife couldn't die. I replied that she was not going to this time. It was a long struggle before she was able to sit up.

At this time I became a chronic invalid, and realized that if I remained in a law office my days would soon be numbered and that I required outdoor work for my health. Therefore, selling my law books, we moved to Indianapolis, Ind.

In 1874 I commenced building other models, as I had the health—and the money to spare, but I was still an invalid, the same as I had been for years before. During these years I sold furniture out of the house to get money for models.

He Has Various Models Set Up.

By the year 1878 I had completed and run several models, one having lights and trolley, as shown by affidavits of F. C. Lewis, and several other witnesses of Indianapolis. One model was on the conduit system, the others I am not fully able to recall. Much of this work was done by Mr. Beck, a gunsmith on Fort Wayne avenue, Indianapolis, and other parts of models were made by Mr. Johnson, a model-maker now residing in Chicago. These different models were first run in the basement of a house on East New York street, near Liberty street; next in the barn of Dr. Christ's house, on North Delaware street, where I resided, and afterwards on New York street, near Delaware street. Along in 1880 I built a gearless motor model car and made a sketch of it, which was signed by Mr. F. C. Lewis and others.

In the winter of 1878 and 1879 I started out to lecture upon the subject of running cars by electricity. I was then living at Indianapolis. I had two little models of cars and a sewing machine run by electricity, fired a cannon by electricity, and carried several other interesting electrical articles, with which I tried to interest the public, hoping to find some one who would equip a large car and run it by electricity.

Landlord Keeps His Overcoat.

I lectured in Indianapolis, Rushville, Wabash and Fort Wayne, Ind., and at several other towns; but my audiences were so small that I could not make money enough to pay my traveling expenses. At most of the towns I was compelled to borrow money to pay my way to the next town and send my models C. O. D. At Fort Wayne the audience was so small that I was unable to pay my hotel bill and the landlord kept my overcoat and all my clothing except what I had on, and I never recovered them. I was very careful not to take my models to the hotels, for fear of losing them also.

I found that the people were entirely indifferent to electricity and its wonders. They thought I was a crank and a crazy idiot to talk of running cars by electricity.

After leaving one particular town I had money enough to pay my way for but a few miles; and I tried to get the conductor to let me go all the way. He said the superintendent of the road was on the train and I should see him. I went to see him and talked to him on the subject, told him that I was going to run cars by electricity instead of steam, that I was lecturing in different towns and that I wanted to get to the next town. He laughed and said if he passed all the "cranks" who wanted to ride on the train, he would not take in any money. So I gave the conductor a cheap watch I had to keep till we got to the next town.

Finally I found that I would lose my models if I stayed out any longer; so I borrowed money from an express agent and went to my home in Indianapolis, sending my models C. O. D.

Mr. Tom L. Johnson, later mayor of Cleveland, then owned the mule car line in Indianapolis, and I had several interviews with him and tried to get him to equip one of his cars with electricity; but he laughed in his jolly, good natured way and declined to adopt my suggestion.

My models were seen by the leading citizens of Indianapolis, and I tried to get them to put in money to equip a car, but they all refused to do so, considering it more than throwing their money away and were just like Tom Johnson. They had no faith whatever that cars could be run by electricity.

T. C. Lewis of Indianapolis, a real estate man, was the only citizen who had any faith in the success of the cars. He tried to interest capitalists, but failed to do so.

Experiences at Grand Rapids.

In 1882, hearing that Grand Rapids was then one of the best electric lighted cities in the West, I returned there, thinking that I could find some one to build a large car. I talked and explained the matter to Mr. Thayer, formerly mayor of the city, and to a good many others, among them Mr. Withey, president of the horse-car line, telling Mr. Withey that if he would furnish three thousand dollars to equip a car with a motor and put up a short length of wire for a test of the car on his street railway, that I would give his company the franchise or right to use the invention in Kent County. But Mr. Withey, after talking it over at a number of interviews, refused to spend any money for that purpose. Mr. Thayer and others I talked with asked if I could run a car up Bridge street hill, and I said I could. They refused to believe this, and seemed to lose all interest in the subject, saying that if I could run a car up the hill I could not stop or start it on the hill; and in coming down there would be no way to retard the speed, and that it would be unsafe to try it. (Trolley cars have been running up that hill ten years.)

Mr. Hughart, President of the G. R. & I. Railroad, said if I could raise the money to pay for the copper wire and other material needed to build and equip a large car, that I could go to his shops and superintend the work, and his men would build it free of charge. I went to many of the leading citizens but none of them believed in it.

These models were seen by a great many people, and between the years 1878 and 1882, as I had time and means, I was trying and testing all the different methods by which the electric power in the motor on the car must be applied; for I knew that it must be just as permanent and reliable as a steam locomotive when it is hauling a train of cars, or it would be a failure.

Has No Money but Has Pluck.

In the month of March, 1884, I heard that the United States Government had issued an invitation to the electricians of the world to gather in a convention in Philadelphia, for the purpose of fixing upon the names for electrical units by which to make contracts. There was arranged in connection with this an electrical exposition to which the illustrious name of Franklin was given. Immediately my imagination was fired by the great fact. I recognized that here, at last, was the great opportunity of my lifetime to meet the electricians of the world, make my plans all plain to them, secure their recognition,—and the rest would all be easy sailing. And notwithstanding that I had not a cent to my name I immediately decided to go and build a car to run in this exposition.

My health was extremely poor and my family tried every way to dissuade me from so foolhardy a trip and purpose. I was deaf to all entreaties. I knew that if I could get a car built and show it actually running I could end all my financial distress. So I borrowed a dollar from a neighborly baker, kissed wife and family good-bye, and with nothing but undaunted faith in God and this one dollar, I started out to win the fortune I felt so sure of.

Called a Fool. Crank and Crazy.

Reaching Philadelphia after many hardships, I began the long and weary search for some one to interest himself financially in building a car for exhibition. I tried first the electrical manufacturers; but without exception they all turned a deaf ear to my entreaties. Not only this, but they went so far as to denounce me as a "crank," a man actually crazy; and one went so far as to pronounce me a "d——d fool." Such a thing as I proposed to do—light, heat and run a car by electricity—was simply impossible. The proposition was considered a joke.

I spent six weeks trying to induce these various manufacturers to interest themselves, and then became convinced that if I was to do anything I must appeal to people not electricians. I therefore started after some of the wealthy people of the city. More weeks were spent among these people, who invariably pointed to the electrical manufacturers as the ones who should be interested in such a scheme. If the electrical experts could see nothing in it, *they* certainly couldn't. Thus things passed from week to week without a single ray of hope. Far from yielding to these circumstances, however, I kept searching.

One day a man told me that he had seen an advertisement in some newspapers stating that the advertiser had a sum of money for the development of some good electrical invention. Following up the clue, I soon found a commission merchant of that city. He did the same as many others had done of going to the electrical experts to inquire about the matter. They told him that if he put up any money for that "d——d Western crank," he ought to lose it. This, of course, frightened him, and he refused to furnish a cent for a car.

Has Hard Work to Get Backing.

However, the fact that he had the money and was favorably inclined was the breach in the wall and I began to work on these two facts. I finally succeeded in getting him to put up money enough to build 50 feet of track on which to run the models. When these models had run successfully up and down the track it satisfied him to a sufficient extent that he was persuaded to put up enough money to build a larger car for experiment. This car was made 20x30 inches in size, and had a small electric motor and two incandescent lamps. This was run heavily laden on the 50 feet of track with a two horse power dynamo. This proved two things: that a car could be lighted by the same current that ran it, and that a small wheel contact on the wire was sufficient. This test was sufficient to satisfy him completely, and he advanced the money with which to build a large car.

Great Dream Is Realized.

I now went to work in dead earnest to realize my great dream, and by the first of September had the satisfaction of running my car across the length of a 70-foot room at 1017 Filbert street. This car measured 4½x10 feet in size and carried twelve incandescent lamps. It was built to accommodate 16 people.

I have had people ask me if its success did not excite me. I answered "No." In my mind's eye I had seen the car running for twenty years before it was born; in fact, it did not seem new to me. If anything, it was old and should have been born ten years before it was. I saw that car running years before, the same as I now, in this June day of 1907, see trains of electric cars running in all parts of the world,—the steam locomotive extinct and as obsolete as the old stage coach, no dust, no cinders to fill the eyes and no smoke. What a blessing it will be to the traveling public, which will then comprise the entire world. The fare from Chicago to New York will not be over ten dollars, and the time twelve hours. Danger will be almost entirely eliminated. Collisions will never occur if a rail breaks or a bridge is swept away or a switch is misplaced. If two trains get on to one section, electric alarms will ring in each cab and in all of the offices for miles each way from the point of danger. Though the trains will make a speed of 100 miles per hour the wheels can not leave the rails, if built on my plan, unless the track is pulled up with the cars. The burning holocausts of collisions and the terrors of wrecks will cease.

But will the grateful world rise up and call the inventor of all this blessed? I suppose an inventor, like Galileo, ought to go to prison and, like Columbus, ought to die in poverty and chains.

After running the car a few days in the shop, we moved it to the Exposition grounds, where as soon as it was set up in running order, I went to the superintendent of the Edison exhibit, and said to him that I had ordered fixtures for the Edison incandescent lamps from New York, and that the firm had written to me to see the superintendent at Philadelphia. The superintendent told me that he had no 10-ampere lamps such as I wanted, but would send to New York and get some. After a delay of a day or two, I went over again to see him, and he said the lamps had not arrived. He delayed me in this way for ten days, the car running every day, carrying passengers without lights in it. The tenth day a man in his employ came to me and said:

"Over in the Exposition all of the electricians say that you cannot run a car and light with the same current and the superintendent won't let you have the lamps because he says you will fail and will injure the reputation of their lamps."

Loses Patience and His Temper.

This statement made me very angry. I went over and "jumped all over" the superintendent. He finally said that he would come over to my car, with the other electricians of the Exposition, when they shut down at six o'clock, and talk it over.

He came, as agreed, bringing with him the Edison electrician, the electrician of the Excelsior Company, the electrician of the United States Company and the electrician of the Weston Company, they being the four large companies then exhibiting in the Exposition. They sat down in the car, which was not running, and commenced to talk about how it could not be done. I listened to the discussion for over three quarters of an hour, not saying anything myself, not proposing to tell them how I was going to do it, as I did not consider at that time that it was any of their business. I had my resistance coil for protecting the lamps under one of the car seats, and was very jealous like other electrical inventors of the day, for fear some other inventor would find out how I was going to do a certain thing before I had done it myself and claim the invention. I finally turned to the Edison superintendent and said:

"If you had brought over the lamps with you, I would have had them burning, and the entire matter would have been settled."

He answered that they would talk it over and he would let me know in the morning; and they went away. The next morning I went over to see him, and he said:

Is Opposed by the Wiseacres.

"Bidwell, we electricians have talked this over, and have decided that you cannot run a car and light it with the same current, that you will make a failure and injure the reputation of the Edison lamps; and, therefore, we cannot let you have them."

This statement made me very angry, in my nervous condition. I nagged him until he got mad, and, turning to his electrician, he said:

"Give Bidwell all the lamps he wants and get rid of him."

I went with the electrician to the storeroom, where they had several barrels of the 10-ampere lamps. I only wanted twelve lamps for the fixtures in the top of the car. I took them over to the car, and inserting them in the sockets, started the car. I then found I had too much resistance for twelve lamps, as they burned a little dim. I took out one of the lamps, and the rest burned brilliantly.

During this ten days' delay in getting the lamps, Mr. Edison was over to the Exposition from New York and rode on my car. I explained the trolley and all the connections to him fully, and he was very much pleased. He said that a few years before he did some work on electric railways, but was compelled to give it up, because the electric lighting business did not allow him time to work out an electric railway system. He then said that my system was complete and was a success. I told Mr. Edison at this time that I bought the incandescent fixtures from his firm in New York and that I wanted his lamps for them. He did not mention or hint in any way to me that he had ever used an electric lamp in an electric car.

Outsider Tries a New Trolley.

There was a man who worked for a telephone company who spent a good deal of time around the car talking with the merchant who had advanced the money to build the car. One day the merchant came to me and said that the man thought he had a better trolley than mine and wanted to try it on my car. I was very indignant at the request. However, the merchant talked to me and said that I ought to let him try it. Finally, after talking until 12 at night, I saw that I should have trouble with the merchant unless I let the man try his trolley. I then said to the merchant that the next day, having work in the shop, I would remain away and let the man try his trolley for one day.

The next day I did not go to the Exposition building. The following morning, when I went to the Exposition, I found that my assistants were laughing and "making fun" of the new trolley. They showed me one of them, which I now have, and said that after trying to make it work all day his trolley was an entire failure, and he quit in disgust. The trolley they showed us, which he had used, consisted of a rigid arm of iron bolted to the car, the lower end being turned in a half curve so as to fit up under the tubular electric conductor, having on this lower end a wire brush that was made of No. 14 copper wire. The brush was melted and burned by the electric current, showing that it had been used, but had, as aforesaid, been an entire failure.

Bidwell's Wheel Beats the Brush.

The merchant who had backed me did not know at this time, or had forgotten, that when I had my small car, for carrying a boy, that I had tested a great many trolleys and found the wheel the best. I tested this wire brush trolley, as shown in my patent No. 305,730, which I had put into the patent office in the month of February, before I went to Philadelphia, for the reason that various electricians I had talked with in previous years had stated to me their belief that a rolling wheel under an electric conductor would not take sufficient power to do the work with, they believing the contact between the wheel and the electric wire was too small for the purpose.

Whenever an opportunity offered, I talked with all the electricians I met, hiding from them the fact that I had any special knowledge of the subject. My idea was to secure their judgment or opinion upon the different inventions I was working at, without telling them fully what they were, to see if their judgment agreed with mine. But I found the state of the art of transmission of electric power very little known by the electric light men. They knew nothing about the transmission of electricity for power, as their entire time was given to working at the electric lighting business, while mine was given entirely to workng out the transmission of power from an electric wire to a motor on the car, for the purpose of running trains of cars with a motor in the place of the steam locomotive.

Therefore, this stranger was simply trying to do what I had before settled; but, like other men working in the electric business, he refused to divulge to me his so-called trolley before he had tested it, for fear I would claim the invention. If he had stated what it was to me I could have satisfied him without further test that I knew all about it and had tested the contact wire brush myself.

His Object to Replace Steam.

The state of the art among other electric railway inventors at this time was such that in their electric railway inventions they were trying with all their ingenuity to replace horse or mule-power on street cars, while *I was working to replace the steam locomotive on railway trains.*

It was some years after my first inception of the idea of running trains of cars by electricity before I ever thought of applying electricity to the propulsion of street cars, which accounts for the difference between the results of my electric railway inventions and that of other inventors, we having two different objects in view.

After going to Philadelphia, in 1884, I spent all my leisure time in the Philadelphia City Library, searching works on the subjects. I found some old books upon electricity that distinctly stated that the inside of a hollow tube did not and would not conduct electricity, which was contrary to my own experience and practice and therefore had no effect upon my opinions.

Had Spent Years in Hard Study.

My electric system was the result of years of study, thought and anxiety, making rough models as best I could and at times hiring the work done as I had money, having during the years while living in Indiana, from 1878 on, sold furniture out of the house to get money to build models with, thinking I was so near success that I would be rich in a few years, but learned, as heretofore stated, that I was so far ahead of the public that they ridiculed the subject and called me a "crank." The state of the art was such that running and lighting cars with the same current was an unknown subject up to 1884, except to myself. Even the authors of books on electricity had no knowledge of it whatever.

While I was at Philadelphia a number of prominent English electricians rode on my car; and I explained to them fully the details of the lighting and the trolley, at which they expressed great pleasure; and none of them, either by hint or word, or any kind of expression, said that he had ever seen, heard or read anything similar to my trolley and the heating and the lighting of my car with the same current. I afterwards met these gentlemen in the Chicago World's Fair, in 1893, and they all remembered me and expressed pleasure in meeting me again.

No Criticism of His System.

Many well-known American electricians also rode on my car, to all of whom I fully explained my system of lighting, heating and the trolley, and none of them, or any other electrician who rode on the car in Philadelphia, either by word or hint, or any kind of expression, said that he had ever seen or read of or heard anything like my trolley, my lighting and my heating. Neither did any of them criticise my electric railway system, after seeing it operated, but, on the contrary, commended it very highly.

Up to and before 1884 the word "trolley" had never been used in connection with electricity for contact purposes. The term used to express the contact or connection between a conductor and a motor was the word "brush," and it implied either a wheel, a rubbing or a sliding contact.

In connection with my railway track, and run by the same current, I had five arc lights over the track, which were the steadiest and most reliable arc lights in the Exposition building, as my principle of damming up the current with resistance so as to burn arc and incandescent lights on the same circuit was not used by any high tension current companies that I had ever heard of. Without the resistance to steady the current, their arc lights were constantly flashing up and down. The state of the art of building motors was so crude at this time we thought the wire on the motor must be two sizes smaller or the current would pass through without "friction."

Gets Offer to Come to Boston.

During the Philadelphia exposition Mr. Alexander and Mr. Warren S. Hills of Boston came to Philadelphia and made a proposition that I should go to Boston, where they proposed to hold an electrical exposition in December, 1884, and January, 1885,, which I agreed to do if they would pay for the track and the conductors and that they should be my property at the end of the exposition. They were also to furnish a motor for the car and a dynamo for the power.

At the close of the Philadelphia exposition I went to Boston, and a track was built in the second story of the exposition building in Boston, a parallelogram in shape, with curves at each end, making a continuous track. I here had two cars built, equal in size to ordinary street cars, only lighter in their construction, one being a trailer, each of them having *sixteen incandescent lights in the roof,* and the front car had *in the floor an open iron register under which were my coils for heating the car.*

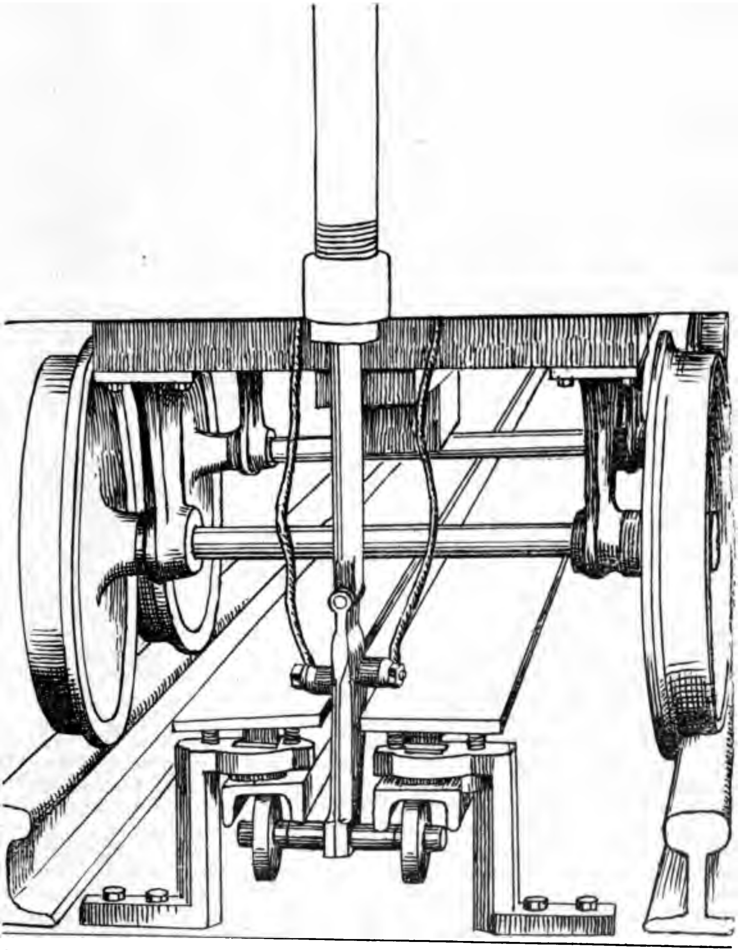
The cars were nicely upholstered and made a sensation among the Boston Yankees, who, when they came to fully understand that an unseen power was running, lighting and heating the cars, said it was either magic or a fraud; for they could not comprehend though they were afraid of it.

My trolley used in Boston was different in shape from the Philadelphia trolley, being a trailing trolley, the same as the present overhead trolley, except that the spring was attached in a different manner. It contained the pivot, giving a lateral and horizontal motion, the same as in the present trolley, but under the car, as they would not allow any overhead wires.

The car, the lighting and the heating was all run by one dynamo, located in the shop of the Weston Company, about one mile from the exhibition building.

During this Boston Exposition I was sick and away from the building a good share of the time, and my eldest daughter had charge of running the cars and collecting the fares, assisted by Mr. Lewis.

This Boston trolley car was built in the shop of Mr. Warren S. Hills, an electrician of many years experience, who was then engaged in manufacturing arc lamps, dynamos, and other electrical equipment for lamps. The trolley was built entirely under my supervision in his shop; and I had that trolley until it was stolen from me in Detroit, together with a large number of pieces of electrical equipments, dynamos, motors, etc.



MODEL OF TROLLEY WHEELS.
(Showing Contact under Car, between the Rails.)

These Boston cars, like the Philadelphia car, were the great attraction of the Boston Exposition and were extensively advertised, and people came from all parts of New England to ride on the cars and examine what they called a mysterious and unknown element, which would propel a car, and light it and heat it. The expressions of the people were that the operation of the car was more magic than of actuality, and they listened with open eyed wonder as I tried to explain to them the mysterious action of the electric current, and how the motor was attached to the car axle, and the car lighted and heated by the same unseen fluid.

Explains His Car to the Governor.

I was in hopes of selling the rights to use the trolley cars in New England to some one in Boston, but could not do it. The governor came to the exposition. Riding with him on the car, I explained in detail all of its workings and thought an impression of value was being made on his mind. But when he went away he asked me a foolish question about the car that proved that all of my talk was thrown away on him and that he did not comprehend any part of the invention.

The exhibition closed without any practical results, I being no farther along financially than when we left Philadelphia.

Leaving the cars at Boston, we went back to Philadelphia. After staying there a month and not being able to raise money we concluded to ship the Boston cars to Detroit, Mich., which we did.

In March, 1885, I brought my trolley cars from Boston to Detroit, where I laid my track on a lot of land in shape of a parallelogram, 150 feet on each side and 75 feet at the ends. At one turn of the track there was an up grade, which finally caused the loss of a $100,000 contract.

Mishap Spoils $100,000 Offer.

After the cars were running successfully, we induced three Cleveland capitalists to come to Detroit and investigate our trolley cars. They were so well pleased with them that we closed a verbal contract for them to furnish $100,000 to build a line in Cleveland. We were starting to go to a lawyer's office to sign the contract when they said they would take another ride around, which we did until going up the grade on the turn the car axle broke, stopping the car. We all got off to see the cause of the stoppage. I explained to them that the breaking of the axle had nothing to do with the electric motor or its equipment. They went to one side and whispered a few minutes and then announced that they had decided not to enter into the contract.

Their decision was almost as stunning to me as hitting me on the head with a sledge hammer. A moment before I had supposed that my struggle with poverty and adversity was over. Now I was back again in a deep valley, with high mountains all around, which I must climb or give up in despair.

The last I could not do, for I was not built that way; and the first I must do. No matter how steep the mountains or thick the stone walls, over and through them I must toil on to the end.

After the failure to close a contract with the Cleveland men, I tried to get moneyed men of Detroit interested, but could not, though they knew nothing about the broken axle. (We had a new one within ten hours.) I will tell a story here to illustrate that it's easier to get money on a fake invention than on one with true merit.

Easy for Fakers to Raise Money.

The summer I was in Detroit, a man with six blue vitriol electric batteries of two gallons each advertised his "wonderful invention" of an electric battery to be used in pumping water on farms in the place of wind mills. He ran a little model pump that would pump a gallon of water in fifteen minutes. I called at his place and easily detected its absurdity. First, a blue vitriol battery is the weakest of electric batteries for power purposes. In the old days, before dynamos, if we wanted electric power we used a bichromate battery. Even those will exhaust their strength by continual use in three or four hours, and they have to rest and renew their strength. And after 100 hours' work in full the chemicals must be renewed.

With this foolish thing that man raised over $100,000 from the monied men of Detroit and in two years went into bankruptcy, breaking up the man from whom I rented the plot of ground and who had refused to invest in my trolley car. Such is life.

I commenced running my trolley car in Detroit in April, and by September had used up every dollar I had and all I could borrow. I had hoped to make money letting people ride at five cents each, as in Boston; but the Detroit people would go on the roofs of the buildings or look over the fence to see the car run, and keep their nickels.

As a last hope I went over to Cleveland on the steamboat, giving my overcoat for my fare and never saw it again. I hoped to get those men to reconsider their decision and build a short line. They would not even talk about it. I spent ten days there seeking others, but failed to interest any of them, and borrowed two dollars for my return fare, and owe that with the hotel bill yet, but would be glad to pay them now. I have money if I could get a trace of the parties.

I returned to Detroit completely broken in health and temporarily at the bottom of the ladder and decided I would go home to Grand Rapids and rest for a short time. How I got there I do not remember, but suppose some kind-hearted conductor passed me as usual by my telling him my circumstances and of my trolley car before I got on the train.

Lawyer Upsets Another Offer.

After resting a week or two I became uneasy. I felt that I must finish my work while I had life to do it in, for at this time my years seemed nearly ended. Therefore the first of December of 1885 I went to Chicago, taking the photographs of my trolley cars as run in Philadelphia and Boston. Stopping there with my sister a week or so I called on old acquaintances I had known twenty years before and finally interested one of them in my trolley car invention, and he interested another party, and they agreed to furnish $50,000 for a short trolley line, provided a certain patent attorney gave a favorable opinion. I gave him my patent papers, and in a week he told them that cars could never be run by electricity and that they had better keep their money.

This chap (a wonderful prophet) tried to secure the position of commissioner of the Patent Office in Washington some years since.

This was knockout number two but did not hit as hard as the one in Detroit, and I got up quicker, ready for another round.

The parties who were to furnish the money said they were sorry for me but could not put up the money on the opinion given by the attorney.

Securing several small things that I could sell on the way, I decided to visit several Western towns where there were horse railways. I went first to Sterling, Illinois. There I met a merchant who thought I had a good thing and did all he could to get the horse car men there to equip a car with a motor; but we failed to interest them, and I left there for Rock Island. The superintendent of the horse railway there said they were losing money and if they put in trolley cars they would cost too much to run them. It was useless to talk about it to him.

I then crossed the Mississippi River to Dubuque, Iowa, and interviewed the manager of the horse railway, who said that I could run my trolley cars on a level street, but not up the streets of Dubuque from the river, where it required three horses on the hill to pull a 14-foot car.

Is Often Both Hungry and Cold.

I worked my way out to Iowa City. I do not remember if there was a horse railway there. The weather was extremely cold and I was suffering for lack of sufficient clothing, and decided to try to get back home. I cannot recall how I managed it, but I do remember of being frequently hungry and spending one night in a depot and of arriving at Valparaiso, Ind., one Saturday night, sick and worn out from privations on the trip and putting up at a little hotel near the depot.

Sunday morning I went to church, having a silver quarter and an old style copper two-cent piece. They were both of the same size and weight. When I saw the contribution box coming I reached in my pocket for the two-cent piece and brought out the quarter of a dollar. At first I hesitated, then decided the Lord had directed my fingers to try my faith. I would not go back on His leadings, and dropped the quarter in the box. The next day I made some sales and had six dollars, which was more money than I had had at one time since leaving home.

This incident strengthened my boyhood faith and belief, viz., if we trust God and do right He will provide for us. With this money I arrived at Grand Rapids, after an absence of about six weeks, as near as I can recall, sick and discouraged.

I had been sick so long with kidney trouble that it had finally run into something like diabetes, and I failed rapidly for the next two months, until I could only walk slowly with a cane, and seldom left the house.

In April my son Charles came from Toledo to see me, saying he had been to Chicago and found parties who would put money in our trolley cars.

I did not expect to live more than a month or two and did not want to leave home; but he insisted, and we arrived in Chicago in May, 1886. After one or two interviews we found they were "fakes" and wanted to secure possession of my patents. I intended to return home, but he insisted on my going to Kankakee, Ill., with him where he had business to attend to. At the hotel we met an agent selling magnetic belts. He tried to sell me one, saying it would cure my trouble of the kidneys. I thought he was a fool to say he could cure me. Had I not worked in electricity for years until after a day's work over my batteries I would be charged so full of electricity that my hair would stand straight out, and all of those years I had been slowly but surely failing in health? Finally my son insisted on my putting on a belt, the result being that the first night I slept sound all night. Usually I tossed about and flopped like a fish from nervousness. In three months my kidneys were cured and I had gained thirteen pounds in weight and was in better health than in many years.

Tries Selling Magnetic Belts.

All of this time my trolley cars were lying in Detroit and I was out of money but again able to earn some. Therefore, I thought the easiest way to do so was to sell magnetic belts. They were curing me and I had faith in them and commenced selling them within two weeks, going to people who knew I had been an invalid for years. They were so surprised at my improved appearance that I made many sales for three months and then went to Detroit and shipped my trolley cars to Chicago.

Runs His Cars in Chicago Shop.

My cars arrived in Chicago in November, 1886. We were delayed in getting a permit to put the cars on the lake front park until winter came on, when we rented a shop and laid down sixty feet of track and put one of the cars on it and ran it back and forth for a month or two.

We ran the car at high speed within a foot of the wall at each end of the building and, reversing the current with my polarity switch, the car started back at a speed of ten miles an hour.

This polarity switch I used on my small models in Indianapolis, running them back and forth on a track about twenty feet long. It was never used on a large car until I used it on my first trolley car in Philadelphia. There all of the electricians made fun of me, saying a polarity switch on an electric car would do to play with at an exhibition, but if used on the street it would burn out the motor.

It was like every other part of the trolley car, entirely new to all living electricians but myself. I had spent years studying every detail of the trolley car until it was so perfect that it is now running in every part of the civilized and semi-civilized world and has never been improved by the operators. However, in the summer of 1906 I thought I would investigate and see if any improvement could be made. The result was that within two weeks I changed and improved it so that a car can be equipped at fifty per cent of the cost of the present system as it is generally operated.

A Conspiracy Nipped in Bud.

Many people rode on the car in the shop and we succeeded in interesting several who put in $100 each to pay for refitting the car and putting it on the lake front park. Among them was one man they called "Doctor." I do not remember his name. When $400 had been paid in he put up a conspiracy to the effect that unless the control of the patents and the equipment were turned over to his exclusive management they would not furnish any more money.

We were so tied up to those men we could not very well induce others to put in the money for expenses. Refusing to turn over the contract to him, we were at a standstill. Things remained this way for several days. Finally, to bring the business to a focus, he made this proposition, that we were either to accept and turn over the control to him or return the $400 within two days. In our extremity we found a friend who advanced the $400 to pay the Doctor, who was very much surprised; and we were thankful to get rid of the "shark."

Unfortunately, we could not interest any other parties and were out of money and not able to pay rent and were compelled to store everything we had in a coalyard until spring, when my son Charles, who was with me, succeeded in interesting a man, who furnished $500 to put the plant on the lake front park, where we commenced running one car about the first of June the following summer.

Kind Words for Mayor Harrison.

Right here I wish to say a kind word for Mayor Harrison (who was assassinated shortly after the closing of the World's Fair held in 1893). When we were ready to lay our track we went to the Street Commissioner for a permit to do so. He told us it could not be done unless we secured an ordinance from the City Council. This we knew would take political influence and possibly something else that sounded very much like "cash." We were stumped for a day or two until I went to Mayor Harrison and explained to him that I had brought a car from the East run by electricity which I desired to show to the street car men and did not have the money to hire vacant property for the purpose. He listened to me, then turning to his secretary he said:

"Go and call Tom."

When Tom came the Mayor said:

"See here, Tom, you let this man put his car on the lake front. It will not injure the city, and will do him good."

I felt very grateful to Mayor Harrison and have never forgotten the kind words that were in his decision—the first one I had received from anyone in authority that was of value to me in all of the years of my struggle. The kind words I usually received were those that cost the giver nothing and therefore were very cheap, which reminds me of a story.

A working man with several children and a wife dependent upon his labor had fallen and broken his leg. As usual in such cases, a crowd collected, expressing their sorrow at his misfortune. An Englishman of my acquaintance stopped to see what the crowd were looking at. As soon as he learned of the man's circumstances he put his hand in his pocket and brought out a $5.00 bill. Handing it to the man, he said:

"I am sorry five dollars' worth."

I learned after the interview with Mayor Harrison that those simple official deeds to the poor and others that cost the city nothing was what had endeared him to the hearts of the people and was the reason for his election as Mayor of Chicago term after term. In other words, he cut the official "red tape" when good could be done without detriment to the city's interest.

Cars on Lake Front Track.

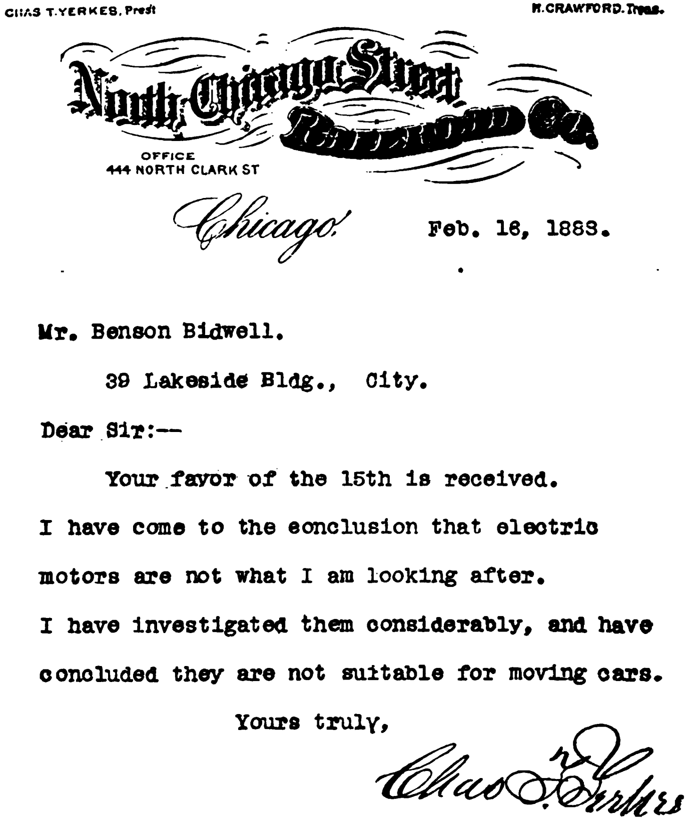
We soon had our trolley car running on a track 600 feet long, with the same success as in Philadelphia, Boston and Detroit. Mr. Yerkes, president of the North and West Side cable street car company, and Mr. C. H. Holmes, of the South Side cable street car company, were invited to ride and investigate. Mr. Yerkes' first criticism was that we could run it easily on a level track but we could not run it up the five per cent. grade leading to the bridges, the tracks being covered with greasy mud. In order to overcome his criticism we elevated the north end of the track to a ten per cent. grade and ran the car up, stopping and starting it with the same ease we could on the level track.

The next criticism was that we could not run the car on to a switch track. We then put in a siding track 100 feet long and ran the car on to the siding as easily as on the main line.

All of these criticisms will seem very foolish to people who have been riding on the trolley cars for ten years; but it was a serious matter to us; for, as fast as we removed one obstacle, horse car owners and others would bring up some other objections for us to meet. We worked out all of the points raised during the summer, but could not raise the needed $50,000 to build a line on the streets of Chicago or in some other city. We had a proposition from the horse car men of Minneapolis, saying they would equip their lines with trolley cars provided we would build one mile and it proved a success. Also a proposition from capitalists in Grand Rapids, Mich., that if we would come there and build one mile of our trolley system and if it was a success they would pay for it. With these propositions from responsible men we could not raise the money. The summer of 1887 glided away into winter and nothing permanent had been accomplished.

Yerkes' Lack of Good Foresight.

In February, 1888, I wrote Mr. Yerkes a final letter to know if he would not build a trial line and received the following answer, which put an end to my hopes in that direction:



CHAS T. YERKES, Prest
H. CRAWFORD. Treas.

North Chicago Street Railroad Co.

OFFICE
444 NORTH CLARK ST

Chicago Feb. 16, 1883.

Mr. Benson Bidwell.

39 Lakeside Bldg., City.

Dear Sir:—

Your favor of the 15th is received.

I have come to the conclusion that electric motors are not what I am looking after.

I have investigated them considerably, and have concluded they are not suitable for moving cars.

Yours truly,

Chas T. Yerkes

After receiving Yerkes' letter we concluded there was no hope of building an experimental line in Chicago; and, as we had no money to pay for storing our car and equipment, we sold all of it but our generators and motor, with belting worth about $500. These we stored in a large room where other things were kept. When we wanted some of them to use after six months, we found they had all been stolen, and I found myself worse off than I was when I started for Philadelphia. For all of my small model trolley cars had been stolen, some of them in Philadelphia and some of them in Detroit. Therefore, without a model or a dollar or a trolley car, I was apparently knocked out for the last time.

Is Disappointed at Newark, Ohio.

My anxiety and work on the lake front brought on a sick spell which kept me in bed for two months. As soon as I could get out again I went to Newark, Ohio, to help start a trolley line there; for

I had been invited to come on there and help in that work. With other parties, I spent several months getting subscriptions to the stock of a company organized for the purpose. We finally secured subscriptions to the amount of $15,000, and ordered the first car, the rails for the track and all of the other equipments, and let a contract for laying the track. When we wanted money for paying the bills, nearly all of the subscribers refused to pay, saying it would be a failure, cars could not be run by electricity.

One of the directors of the company had a relative who was a lawyer, another had a son-in-law who was a lawyer, and these two were ordered to commence suit to collect the subscriptions, which they did, charging $10 each on each suit. Some of the subscriptions were for but $50. Seeing that the collections would last an indefinite time and from 20 to 40 per cent. would be eaten up by the lawyers, I gave up in despair, it being the most severe knockout I had received. From the beginning it looked reasonable that I could build a trolley car line on the money to be received on those subscriptions. Therefore, I had builded my hopes higher than ever before.

My wife and myself were boarding at a hotel; and as I had been in Newark six months, with but little money, we were obliged to leave her trunk—from which its contents were mostly stolen or moth-eaten before we finally recovered it by paying the bill.

I sent my wife direct to Valparaiso, Ind., to visit our daughter, and again started to sell magnetic belts. But as I was among strangers it was slow work. Stopping at the towns on the way, I arrived at Valparaiso in about a month, sick in soul and body.

Finds His Ideas Have Been Stolen.

As the year 1889 drew on I looked over the field and found from the newspapers that Eastern firms had commenced building trolley car lines and that all answers I received from horse car men contained the short but fatal sentence to my hopes as follows:

"*We have word from trolley car line builders that they will equip our railways with electric cars not to be paid for until finished and running successfully.* We would be foolish to advance the money to you under the circumstances."

Talking the matter over with my wife, we concluded it was useless for me to continue the struggle and that we would move to Rochester, Ind., where my youngest son lived, and I would sell magnetic belts for a living while awaiting the development of the future, intending to sue the infringers for royalties as soon as I could secure a competent patent lawyer to do so.

Moving to Rochester, Ind., in 1889, I commenced to sell magnetic belts for a living. It was slow business for the first year, until I had cured several chronic cases, when my sales were better, and I earned the best living we had enjoyed in ten years, for I had quit inventing and turned my attention to supporting my family.

The second year I bought a Texas pony and buggy on payments, so I could drive about the country. Nearly all of the roads were turnpiked and as level and hard as a floor. The next two years were the pleasantest of my life. My pony would trot mile after mile without urging.

He Describes Rural Felicity.

From springtime to fall the country was beautiful. The sweet songs of the birds, the flowers, the deep green new grass, the budding trees of springtime, the flapping of the long leaves of the corn as the wind rustled it, the ocean-like waves of the wheat fields rolling in the summer breeze, then the golden yellow and the whir of the reaper and binders, soon the rattle of the threshers shelling the rich harvest of wheat, made up a scene of beauty and activity never to be forgotten.

When the threshers came to a farm all of the men near by came to help in the field and the women to help prepare the bountiful dinner. Every passing stranger was welcome, and the dinner those ladies set up for the hungry men was not only equal but far superior to your best hotels, whether at $2 or $5 per day. It usually consisted of fresh and salt beef, fresh and salt pork, chicken and turkey, several kinds of vegetables, three or four kinds of canned fruits and sauces, and apple, mince and whortleberry pies and three kinds of rich home-made cake. No Frenchman or any other man could cook foods as could those Hoosier ladies, those farmers' wives.

The salt of the earth, pure, noble and good, that kind can be bred only on the farm, amid the scenes of nature, away from the follies of city life.

If you had enjoyed their hospitality for three years, as I did, would you forget them? Never.

In 1894 the base of my spine had become weakened from constant riding. In the fall of that year I caught a severe cold. It settled in my bladder. I came near death before getting relief. The doctor advised that I should go south to spend the winter. My sister, Mrs. Mott, was visiting her son at Biloxi, Miss., and she having invited me, I went and nearly died after my arrival from the fact that I had been given so much opium to relieve my suffering that my entire system was stagnated by its use. Clemie, the colored servant, went, as a last resort, to a negro doctor, who gave her some medicine that relieved my clogged-up system.

Soon I tired of sitting around with nothing to do but eat, sleep and read. Seeing many odd things that were new to me, I used my time writing stories, one of them being the "Flying Cows of Biloxi." (The book is on sale by newsdealers.)

In April of 1895 I returned to Rochester and sold magnetic belts during that and the following summer; and in February, 1897, we moved back to Chicago.

Arriving in Chicago, still suffering from bladder trouble, being confined to the house in the winter and during bad weather in the summer and constantly failing year by year, I was still determined I would not leave this world until I could get money from my trolley patents to leave to my wife. We had struggled and suffered together for thirty years, living in hope of a few years with money to enjoy the comforts of life.

His First Suit Is Thrown Out.

I still realized that the money would not come without an effort on my part. Therefore, in the fall of 1899, I went to Grand Rapids and interested an old friend, Judge Burlingame, who commenced a suit against the trolley railway company of that city for royalties. This suit lingered in the United States Court four years before it was argued and the typewritten evidence submitted to the Judge. After holding the papers eight months the Judge returned them to the Clerk of Court, dismissing the case without an opinion. We had used every dollar we could raise for expenses and had no money to give bonds for an appeal. Quite a number had advanced money on an agreement to share in the royalties to be collected, provided we gained the suit, and said they were ready to advance the money for an appeal if the Judge had given his reasons for dismissing the suit.

It will not do for me to tell what people, unprejudiced lawyers and other men thought of the dismissal of the case. If I did I would be liable for contempt of court. It is enough to say that one of the judges concerned in the case (twenty years younger than myself) has been called to his final account. I hope he arrived at the Judgment Seat with a clear conscience.

I will here remark that a mysterious Providence has taken away every man who has openly worked against me,—every man of them not as old as I am at the time of their demise. I will not pretend to account for it, only remarking that in all this work of inventing the trolley car, the car telephone and the cold motor, I have been led by a Higher Power and am doing His work or work for the good of universal humanity.

How the Trolley Blesses Mankind.

In order to show the wonderful blessing the trolley car has been to all nations and peoples, I here insert an article taken from the *Scientific American* of December, 1906. Similar testimony can be found in all parts of the civilized and semi-civilized world.

"The subway, elevated and surface cars of Greater New York carried three hundred and twenty-five million passengers during July, August and September. In Manhattan Borough alone the number was nearly two hundred million. Taking the latest statistics of total population and making due allowance for infants in arms, the very aged, citizens in hospitals and in jail, and those who ride in automobiles, we find that a large majority of the inhabitants of the island must have put in the entire time between six in the morning and two-thirty in the afternoon being conveyed with more or less rapidity from one end of the town to the other in the vehicles of the traction monopoly.

"The condition is by no means peculiar to New York, although it obtains there in its fullest flower. The people of Chicago, Philadelphia, Boston and other centres spend a large—but not a good—portion of their lives on wheels. Indeed, whenever we see a traction report from one of those cities, with its amazing statement of rides per annum per inhabitant, we wonder why residents bother so much about the houses and flats that are, after all, mere halting places between cars. Why do newspapers have 'House Beautiful' columns when they could do so much more for the esthetic uplift by agitating for bright birdcages and tasty ingle-nooks in the street cars? Who can calculate the degree in which urban intellectual activity would be accelerated if the traction companies would only put little busts of Ibsen and G. Bernard Shaw over the fare registers?"

I was in Grand Rapids one and one-half years, and was given up to die at two different times from bladder trouble.

Another question could be raised here: If I was doing the Lord's work, why did he not restore my health? The only answer I know of is that he often picks out the weakest to do the greatest work and leaves them by faith to do it the best they can, constantly asking for divine help.

Another answer I have is, if I had been a well man I should never have been an inventor. It is too slow to suit my ambition and to suit my desires for the comforts of life which an inventor cannot have for years and years, if ever.

Two of three different times in my earlier years I tried to drop the burden. Speaking in a plain sense, as I now see it, I was "kicked back into it" by that same Providence that called me to the work from the day of my birth. I have passed by the open door of the tomb times innumerable as a boy and a man. Born an invalid, inherited from my mother, who was sick almost seventy years before she died, at 71, I am in more vigorous health than since I was thirty and gaining in bodily vigor every month. I can only account for it in the fact that my work is not done. The divine mind has revealed farther advances in electro-magnetism that will require twenty years to complete.

His Telephone for Railroads.

While in Grand Rapids my son Charles secured the use of a mile of street railway track and two cars, which he fitted with telephones and for six months ran the cars, 'phoning from them through the central station to all parts of the city and to Muskegon and Holland, each forty miles away, demonstrating that anyone could talk and hear from a moving car as easily as from any two 'phones.

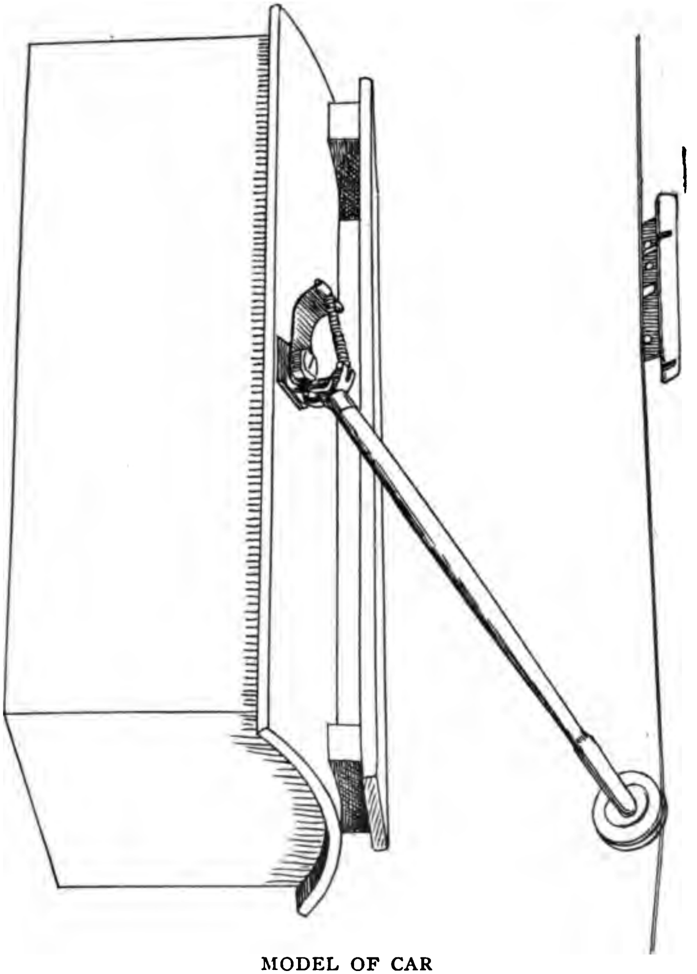
We tried to equip five miles of one of the steam railways but could not interest them. Therefore, we sold for old material all of our equipments and returned to Chicago, sick and poor as a church mouse and very much depressed. Sick, sick, sick! The days, weeks, months, and years dragged themselves slowly along until 1905 when, I hardly know why, I began to improve and new hope entered my soul.

Begins Work on His Cold Motor.

I decided to try to build a cold motor—a motor or generator that could not get hot or burn out. I had made drawings for it when my trolley cars were on the lake front in Chicago in 1886, but never could raise the money or get anyone interested in it. All of the trolley car men said it was just what they needed and if successful there was millions in it. But none of them would put a dollar into it. It was the same old familiar song about the trolley car millions, if successful; but not a dollar to try to make a success of it.

Having decided to build a cold motor, the next move was to get a patent and to finance it. We still had the pony and buggy I had bought at Rochester. The pony was now twenty-one years old, of no great value, but a great enjoyment to my wife and myself in riding to the parks in the hot weather, and it cost but little to keep her, as she lived on the prairie grass near the house.

We decided to sell the pony, the harness and the buggy, to pay for the application for the patent; which we did, and succeeded in filing the application in the patent office. Having a foundation to talk from, I went to an old friend, who had known me for twenty-five years and who had faith in the final success of my inventions. He sent me to an acquaintance of his, who finally



MODEL OF CAR
(Showing Railway Telephone System.)

let me have $275. With it I commenced work, and when that was used up he sent me to another friend who let me have $285. And I got small sums from others, as the work progressed. Thus, without giving security, I borrowed, in all, about $700.

Stock Company Is Organized.

After a while we decided to organize a company and sell stock, which would enable us to raise money sufficient to begin building the cold motors or generators. The selling of our stock was a success from the commencement—the 3rd day of September, 1905.

I wish to remark here, for the benefit of young men who are struggling for success, that, in the forty years of my battle for success, I always and everywhere tried to do right. I had temptations, as every human being has, to do mean and dishonest things for temporary success or benefit; but, with the help of that Divinity that is ready, able and more than willing to assist all that humbly ask Him for help in time of need, I successfully resisted those temptations and retained the reputation of trying to be square in my business dealings. Though at times, while sick and building models, I became in debt and could not pay for three or four years, I always *did* pay in full.

It was that reputation of thirty years that enabled me to borrow the $700 without security, which I repaid within six months. Without that reputation the Bidwell Electric Company would not be in existence, and I would still be a poverty-stricken old man without a dollar for the comforts of life for myself and wife in our old age.

I therefore ask the plain question of every young man, "Is it not best to do right?" and I add, "A good reputation is better than great riches." "Riches take wings and fly away." A good reputation lasts as long as you live,—also through an endless eternity.

Even after we had raised money for our first factory, I had a long battle before my first cold motor was a success. All of the men who worked for me thought it would not be a success, and some of them told me so. My health was such that I could not be in the factory to watch the work and help do it; therefore it was usually done different from my directions, the superintendent saying it was better his way and that I ought to begin building open-type or common motors, so the business would not fail.

His First Motor Is Great Success.

Our first cold motor was a 20-horse power machine and run coated with ice from the first day it was set up and finished, with the exception that the man who had charge of it would not keep a sufficient pressure of gas until the pump became heated, causing an expense of $15 for repairs. After discharging him, it was more of a success than we anticipated. After this three men put up a conspiracy to damage the new pump we were building for cold motors and delayed us for two months, until we learned of their treachery and discharged them. Who put them up to the plot we could never find out; but as every electrician in Chicago and, in fact, everyone in the United States denounced it as a fraud, these men, as near as we could learn, were put up to their treachery by outside influences.

We ran this first cold motor five months in the factory before showing it to the public (waiting for the patents to issue). We were greatly amused and at times indignant at the different so-called financial journals, some of them printed in Chicago and some of them in other cities, raising the cry of "Bidwell Fraud." These editors, who are so anxious to protect the dear people who have not asked for protection, are, from my experience, the most arrant swindlers themselves.

After the cold motor had been running successfully for ninety days, *The Workers,* a machinery publication, printed an article which was a rank sample of the kind of prejudice, ignorance and jealousy that follows any man who is in advance of the people where he lives, and who do not like any ideas in advance of those they inherited at birth.

In conclusion I wish to say that I have thousands of friends who have known or heard of my struggles who have always had kind words and wishes for my ultimate success.

How the years spin and spin on and on in a great circle; while we, in its centre, cannot see its distant periphery or horizon and grope along blindly toward it. When we think we have arrived and open our eyes to see it, lo and behold! it is still far away.

Lord Is Still, His Fortress.

I am past seventy years of age and have many reasons for being thankful for the years that have gone by, though they have been years of sickness and suffering, and I am yet suffering intensely from bladder trouble. Yet we are better off than thousands of others.

Therefore, I can still say of the Lord, "He is my refuge and my fortress, my God; in Him will I trust."—Psalm 91:2.

REMINISCENCES FROM BOYHOOD TO MANHOOD.

PART III.

Reminiscences from Boyhood to Manhood.

Collated from Prof. Bidwell's Diary, or Related by Himself from Memory.

At the time of my birth, September 2, 1835, my father, Austin B. Bidwell, was a farmer in Livingston County, Western New York. My mother, before her marriage, was Laura I. Butterfield. During my infancy our family lived in a log house, in the midst of the virgin forest.

Our only method of heating and cooking at that time was by means of a large fire-place, extending almost across one entire end of the family living room, which was kitchen, dining-room, and bedroom, all in one. In a corner stood one of those old-fashioned high-post bedsteads with the top and sides covered by a canopy of heavy cloth to keep out the cold of the severe winters.

He Sleeps in a Trundle Bed.

The children of the family slept in a trundle bed, which was very low and on casters, to facilitate moving about. During the day, to economize space, the trundle bed was kept beneath the larger bedstead, and was drawn forth only in the evening, at the children's bedtime. After the little ones had been snugly tucked in, the trundle bed was again pushed beneath the larger bed, until only the heads of the occupants could be seen.

By such means all the family were accommodated and, though they were sometimes somewhat crowded in bed, they slept comfortably, though, in those old-time winters, the snows covered the fence tops and the temperature was often below zero.

Is Near Being Burnt to Death.

When I was about eighteen months old the great fire-place came near being the cause of my death. My parents had gone to a neighbor's home to spend the evening, leaving me in care of a little sister. I was asleep on the hearth before the fire. The burning logs began to pop and threw sparks and even live coals in a shower all over the hearth. My clothing was set on fire and, before my sister could put out the blaze, I was severely burned in several places. For some days my parents had little hope of saving me; but I eventually recovered. I have carried the scars there received all my life.

In 1836 a wave of migration struck Western New York. Everybody who could sell his property was bent on moving to Eastern Michigan. My father sold his farm and, with several others, migrated to the new Michigan village of Hudson, in Lenawee County. He bought two acres of land on the bank of the river, just above the dam, and there built his new house. Having recently learned the trade of shoemaker, he opened a shop and at once enjoyed a prosperous business.

Ague Is Scourge of the New West.

The scourge of the New West in those days was the ague. Soon after our removal to Hudson my mother was sick with it for several months; and during that time a younger brother died. There was no doctor in that part of the country, and my father was compelled to make a long journey of fifteen miles to get one. When the doctor finally arrived, sometimes a day late, he would remain an hour or two, give a little advice and less medicine, and return to his home, after charging fifteen dollars for his visit. This fee was a large sum in those days of scarce money.

Speaking of the ague, while our family resided at Toledo, Ohio, in 1848, every member of the household, excepting my eldest brother, suffered intermittently. It was shake, shake, shake—regularly every day, sometimes twice a day, for some member of the family. For a long year and a half we kept at it. We soon shook off all our extra flesh, all extra clothing and, I may add, all extra property as well. For the expense of trying to get relief kept us poor indeed.

The peculiar form taken by this queer disease was a burning fever in the morning and toward noon a deathly chill which seemed to refrigerate the very marrow of our bones. A shaking motion began with the chilly sensations which gradually increased, with the chattering of the teeth, the jerking of the arms, legs and feet, and, at last a creeping and quivering of every muscle in the body. If the patient was sitting when the shaking came on the entire room would be perceptibly jarred.

An Englishman who made his home with us was seized by the scourge. The sufferings of that poor fellow are indescribable—they cannot even be imagined nowadays. He shook harder and longer than any man I ever saw with the ague. When his chill came on he would crouch down into a chair as near the hot stove as he could crowd without actually burning his icy-like flesh. Then he would shake and shake, his teeth chattering like dry bones, his whole body writhing in convulsions. An observer not acquainted with the nature of his malady would have thought him subject to fits or attacks of epilepsy. These severe chills did not result fatally with him, however,—though many other sufferers succumbed after months of torture.

The affliction seemed to defy all treatment, so far as permanent cure was concerned. The skill of physicians availed little. A careful diet appeared to have a more beneficial effect than drugs. My mother's principal prescription was catnip tea, which we all drank steaming hot while the chill was on. It was certainly efficacious; for, though it did not cure us, our chills were less severe when we drank it regularly.

Father attempted to introduce a different sort of prescription, but did not succeed. One day he brought home a pint bottle filled with herbs and whiskey. Exhibiting it to mother, he laughingly remarked that the doctor had prescribed it as a sure cure for the ague. Mother took the bottle, removed the cork and smelled of the contents. Then she quietly stepped to the door and turned the uncorked flask upside down. When it was empty she placed it on the table, but said not a word. Father laughed rather uncomfortably,—and that ended the incident. But no more whiskey medicine was ever brought into that household.

His Mother's Strong Memory.

My pride in my mother will be pardoned, without doubt, when I say that she was remarkable in many respects. (What mother is not?) My mother's comprehensive and tenacious memory was a matter of wide comment. Even as a girl, I have been told, she evinced that characteristic in a marked degree. At the age of sixteen she could repeat from memory Noah Webster's spelling book, Mason's grammar, and the school reader in common use those days. Without undue boasting, I may add that I inherited this trait from my mother. I am able to recall events which happened when I was but eighteen months old. One of these was indelibly impressed on my memory.

While the family were removing from Western New York to Hudson, Mich., the wagon was drawn by an ox team. I was usually in the arms of my mother, who sat in the front of the wagon. I recall that the oxen had unusually long horns and altogether presented to my baby imagination an appearance of ferocity to be feared by all. When we traveled down hill the driver would walk in front of the oxen and, with commands and the use of the whip-stock, prevent them from going too fast. I distinctly remember that on such occasions my baby mind was worried with the fear that those great horned beasts would run down and trample under foot the brave driver.

The Old Log School House.

My first attendance at school was shortly after we moved to Hudson. I do not remember my age, but I was very young. It was a private school, and age of pupils was not taken into consideration. I now recall going to that school but one day, though I probably attended afterward.

The school was kept by a kind-hearted, motherly old lady in her own log house, about a mile from the village of Hudson. I went with my brother and sister, both older than I. I remember there were extensive lowlands and cranberry flats between the village and the home of my teacher. In the winter, when I first attended school, those flats were covered with several feet of water which was frozen over solidly. I shall never forget how we children admired the beautiful red cranberries frozen solidly into the transparent ice, still on the bushes below us as we crossed the marsh.

What probably greatly assisted in impressing on my memory this first day's attendance at school is the fact that I slipped on the very smooth ice and severely bumped my head. I saw a full firmament of stars and for a time fully believed that my skull had been fractured. The bumping of my head probably acted like instantaneous photography, ineffaceably fixing on the nerve films of my brain the whole scene.

Baby Brother Pets a Snake.

During the time that we lived at Hudson snakes and wild animals were numerous all around us. On one occasion my baby brother, two years old, was missing from the house. Mother, after searching for him for some time, found him down by the river playing with a large

BABY BROTHER PETTING SNAKE.

striped snake. Paralyzed by astonishment and horror, mother stood rooted to the spot, not knowing what to do to rescue her child from what seemed to her certain death. The snake lay partly in my little brother's lap and appeared to be greatly enjoying his petting strokes. Little brother did not see mother, but the snake did and quietly glided away, leaving baby harmless and crying because his playfellow had gone. Overjoyed, mother sprang forward, clasped her babe to her breast and breathlessly ran with him to the house. It was some time before she could realize that her child was unharmed.

One day we found a six-foot blue-racer lying in a water trough by our kitchen window, where he was sunning himself. He was quickly killed, all of us deeming it our religious duty to instantly dispatch a snake wherever found.

Boys Have Battle With a Rattler.

While we were living at Adrian, Michigan, a party of boys and girls, including myself, went into the woods in search of strawberries. During the day some of the boys discovered a large rattle-snake and at once began worrying him with long sticks. Being a good fighter, he sprang at them whenever opportunity offered, attempting to strike. But the boys fought him back, while the girls stood on logs at safe distances and screamed with fear as the venomous reptile shook his rattles with a sound never to be forgotten and snapped his tail in impotent rage. The boys finally killed him.

During another of our berrying expeditions some of the more daring of the boys caught a large blue-racer by deftly pinning him to the ground with a forked stick placed across his neck just back of his large head. Tying a stout cord about his neck, they made him a prisoner. Securing the other end of the cord to a bush, we went about our berrying, until we were ready to go home in the evening.

Take Blue Racer Home a Prisoner.

Permitting the angry reptile to wind about a stick, we proceeded to carry him home alive. On the way we frightened almost to death the small girls and boys in the party by chasing them with the snake extended as though about to throw him upon them. When we reached home the question arose: What shall we do with him? After much thought and boyish planning, we decided to place him in a box with a glass cover and put him on exhibition on the roof of our next-door neighbor. The parents in both families protested against this plan; but we insisted. And, at last, they let us have our own way—as they usually did.

When Mr. Blue Racer had been safely ensconced in his new quarters all the boys and some of the more venturesome girls of the neighborhood climbed to the roof to take a look at the big fellow. We had left him securely tied with the original string, in addition to securing the lid of the box. But one fine morning we found him almost out of his box prison—as far as the string would permit. Some careless playmate had left the box lid unlatched. Immediately all the women in the vicinity were out of doors, holding up their hands in horror and all talking at once. Two elderly spinsters, who had passed the period when they saw much fun in life, were the most vociferous. They vehemently demanded that the queer pet should at once be put to death, declaring they had not enjoyed an hour's sound sleep since he had been brought into the neighborhood.

Those old maids were noted for sharp tongues and general trouble making; and, consequently, they were held in wholesome fear by all the boys. Furthermore, the novelty having worn off, we decided that there was not so much fun, after all, in keeping the snake on the premises. So one of the boys, provided with a heavy cudgel, went up on the roof and put an end to the prisoner's captivity and life at the same time.

Danger From Wild Animals.

While we lived in Hudson the boys of our family quite frequently spent the night in the hut of the charcoal burners, at the charcoal pits near us. There, in the deep hours of the night, it was common to hear the calls of panthers, the howls of wolves, and the thrilling cries of other wild animals inhabiting the forest all around.

The panther could imitate the cry of a child or of a person in distress so perfectly that many of the early settlers were lured to their deaths thereby. Uttering its peculiarly plaintive calls, the great cunning cat would lead any follower who responded to the supposed call for assistance to a chosen spot and there pounce upon and kill the unsuspecting victim by a grip about the throat with fangs which cut like a sharp knife. So quickly and stealthily would the work of destruction be done that no cry of alarm could be uttered. And the first intimation of the tragedy would be the missing of the person so killed from his home and neighborhood.

Later, searching parties might discover human bones where the last struggle had taken place; but, sometimes, not even the skeleton was ever found to account for the mysterious disappearance.

In this region the wolves were particularly vicious and daring. They frequently came right up to the charcoal sheds where the burners worked, their eyes flashing savagely in the firelight, while they bared their white fangs and even snapped at the men when they passed near them, where it was comparatively dark.

At the Home of Will Carleton.

The father of Will Carleton, the popular poet, then a farmer, lived three miles from Hudson. In the autumn our parents permitted my brothers and I to go out to the Carleton home to gather hickory nuts in the neighborhood. On such occasions we would avail ourselves of the well-known Carleton hospitality and remain at the farmhouse over night. There we could hear the wolves howl all night long. One night everybody on the premises was awakened by a loud and distressful squealing and general rumpus in the vicinity of the pig sty. Next morning Mr. Carleton made an early investigation and found that a bear had carried off his largest and fattest young porker.

Bidwell Family Move to Adrian.

After our family had partially recovered from the ague we moved to Adrian, Michigan. I do not now recall the circumstances attending the removal, but remember the new home, changed scenes, and additional acquaintances there formed. Here two or three years passed away, accompanied by the usual joys and sorrows of childhood. Here we went on delightful nutting excursions, and caught moles and mice, which propagated in large numbers in the fields surrounding the village. We boys would tame these pretty, soft-coated little animals and carry them about in our pockets and coat sleeves. I well remember a neighbor with bushy beard and hair who carried about with him at all times two or three of these little pets, they finding cozy, warm nests in his hair or beard, as they chose. Some laughable things were seen in those days.

Boy Playmate Killed by Fall.

Among my well remembered early companions was Henry Norton. One day he and a playmate went down the river about a mile below town to gather butternuts. They found a large old tree hanging over the river which was thickly laden with nuts. The tree was partly rotten and, hanging over the deep water, it was extra dangerous to climb. For that reason the nutting boys usually passed it by. But Norton and his companion found it too tempting, and Norton climbed into its branches, high up, and began picking the nuts and throwing them ashore to his playmate. While thus engaged a limb broke, and Norton fell, striking, back down, across a large log floating in the water. His playmate, seeing that Norton was very seriously hurt, and being panic stricken, ran to the village as quickly as possible and gave the alarm.

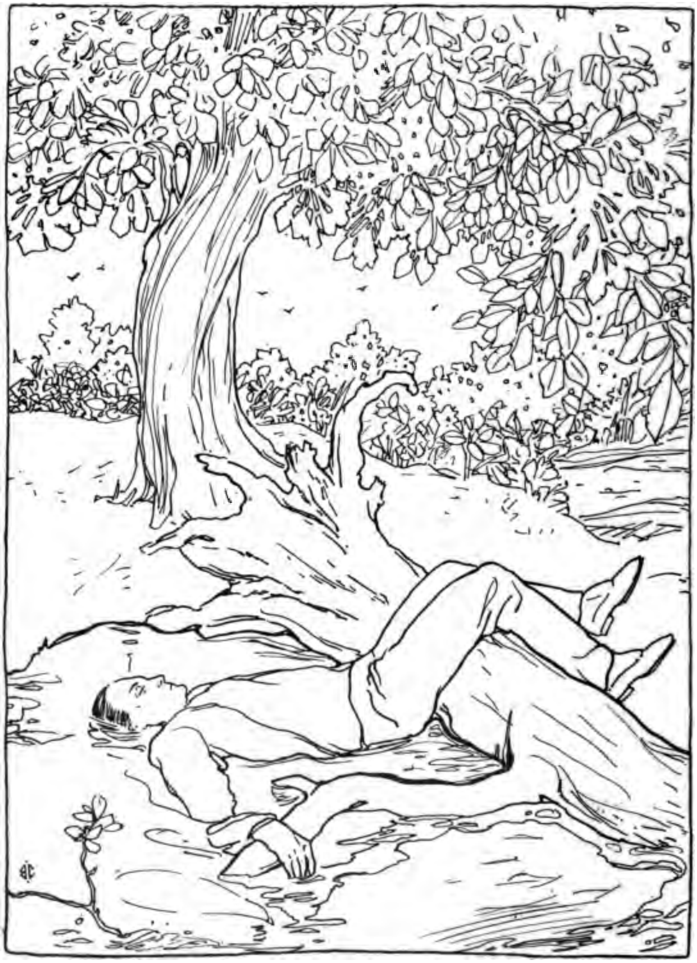
A number of larger boys and grown persons hurried with him back to the scene of the accident. There they found Norton dead, his back being broken and his head submerged in the water. The body was taken from the water, and slowly and sadly the sorrowful procession carried the lifeless boy to his home and his broken-hearted mother. On the day of the funeral all the boys of the neighborhood followed the coffin to the grave.

In after days the boys often passed the scene of the accident and saw with covetous eyes the pile of nuts on the river bank, just as Norton and his playmate had left them; but all were afraid to touch those nuts. The mystery of death and the spirit land beyond were linked with that pile of nuts and seemed to lurk in the shadows of the forest surrounding. Thus those nuts lay, a mute reminder of our dead playmate, until late in the autumn—till no other nuts were to be found anywhere in the forest round.

I and my companions often passed that way, but we usually hurried by, scarcely taking time for a hasty glance at the tree and its little heap of nuts lying near. No laughter or boyish word of glee passed our lips. We feared we knew not what. The deep shade and solemn stillness of later autumn resting over the once beautiful scene awed our spirits to unwonted quietness.

Ghost Ignored and Nuts Taken.

One day, just before the coming of winter, I and a companion were passing that way. The leaves were sere and many had fallen to the earth, leaving the bare boughs limned like gaunt sentinels against the dun sky. The nuts were drying to the kernels, where they lay, soon to shrivel up and rot, affording no man or animal the delicious food for which Nature had intended them. We looked long at them with the wistful eyes possessed only by a small boy who has tasted the full sweetness of nutting as it was enjoyed in those pioneer days. Then we reasoned with each other that it was the



FATAL FALL OF HENRY NORTON.

merest squeamishness to permit that fine pile of butternuts to lie there on the cold ground, to be rotted with frosts and rains, or, perhaps, carried away by greedy squirrels, whose nests even then were well provided for the winter.

While we thus argued, we had kept walking, not daring, as yet, to linger at the scene of the tragedy. But while we reasoned we had gained courage; and, abruptly stopping, I proposed that we go back and quickly gather up the nuts in the bags ,we carried and run for it. Though I had grown somewhat skeptical about the ghosts said to hover around the scene of an accident, I was not yet prepared to fully test the matter. Therefore, my suggestion that we act with celerity. My companion agreed to the proposition. Returning to the pile of nuts, we swiftly scooped them into our bags, and took to our heels, running as only could the hardy exposure-toughened boy of the New West.

Away we went for the hills, looking neither to the right nor the left, lest we spy some lurking spirit in the shadows of the woods. We did not stop till we were out of breath and far out of sight of the old butternut tree. Then, more slowly, we proceeded homeward; but we felt very sheepish, now that the nuts had finally been taken. On soberer thought and in full possession, we had a lurking consciousness of having committed a very mean act. We were sure our boyish companions would so regard it when it came to be known, which was highly probable, for boys have an intuitive sense that is hard to deceive. But if the other boys ever learned definitely who took the nuts we never knew of it.

However, it was soon generally noised about that the nuts had disappeared, and many were the conjectures as to what had become of them, some of the boys, in their dense superstition, suggesting that Henry Norton's spirit had removed them. Others were sure that they had discerned fresh human tracks near the butternut tree, but they could not accuse any particular boy, though much indignation was expressed that any Adrian boy should have been so mean as to take the nuts.

For our part, my playmate and I could see no real harm in the act, after we had got over our first misgivings; and we were sure of one thing: the nuts tasted just as good as any others we had stored for the long winter evenings.

Handsaws Used on Nut Trees.

While we lived at Adrian our nutting excursions were conducted on an extensive scale. We usually carried with us a hand-saw. Having discovered a tree laden with nuts, we would not delay to employ the slower methods of shaking and knocking off the nuts, but one of us, with the saw secured about his person, would climb the tree and saw off limb after limb, until the tree would be almost denuded. The branches once on the ground, gathering the nuts was the easiest of pastimes. Of course the tree would be left a comparative wreck,—never again to bear sufficient nuts to be worth gathering. But the idea of leaving the trees in condition for bearing next year never entered our heads. Our chief thought was to get all the nuts as quickly as possible and before some other party should get them.

In an hour or two we thus would despoil the fairest tree of the forest of its foliage, beauty and usefulness. Since those days I have often marveled that we were not severely punished by owners of the land or haled before some government tribunal for trial following such flagrant vandalism.

Down by an old white mill, in the river valley, north of the village, there was a large grove of butternut trees where the squirrels knocked the nuts off with their paws. They usually did this novel work about daylight in the morning. We boys, learning of this, would gather near the trees just before dawn and silently wait for the active little animals to leap from branch to branch, bringing down the nuts in showers at every sudden movement. When the ground had become well covered with nuts we would scamper forward and, quickly filling our bags, run home in time to eat breakfast and go to school.

Famous Fishing Near White Mill.

In the spring we found fine fishing everywhere. Just below the dam at the white mill was a famous fishing hole. Here we often fished with two or three hooks on a single line, pulling out two or more fish at a time as fast as we could put fresh angleworms on the hooks and drop them into the water.

One day a large muskalonge, the king of Michigan fish, was discovered in the shallow water. A man in our party leaped into the stream, caught the big fish by the gills with his fingers and, after a fierce battle, succeeded in safely landing him. Any angler who has ever caught a muskalonge can appreciate the interest attaching to this feat.

A few miles from Adrian was Devil's Lake. It was one of those clear and beautiful lakes with which Michigan abounds. It is said that the name Devil's Lake was the translation of the original Indian name, which was given because of an incident during the earliest settlement of that region by the whites.

One of the settlers, being attacked by a party of roving warriors, fled to the lake and plunged in. Knowing of a sand reef, whose narrow top reached almost to the surface of the water, the pursued white man soon reached it and fleetly ran along it until almost across the lake, rapidly distancing his pursuers, who got into the deep water and floundered about, almost drowning before getting ashore again.

The Indians knew nothing of the reef and very naturally supposed the white man had walked on the water. Believing him to have connection with the Evil Spirit, they supposed the lake to be controlled by the Devil and appropriately named it Devil's Lake, in their own language.

This was the tradition. However, it does not appear plausible, for the reason that the Indians probably lived on the shores of the lake for ages before any white man ever saw it. And it is but reasonable to infer that the red men knew of all its shallows and depths—far better than the settlers.

Game Sport at Devil's Lake.

Devil's Lake abounded with pike, bass, perch, and other varieties of game fish. We often went there to fish, generally traveling afoot. Full of youthful buoyancy, we did not tire on the somewhat long tramp outward, and the miles were quickly passed, greatly shortened by our anticipation of the well-known good sport awaiting us at the lake. Finding some shady spot, we would cast in our hooks, and the prime sport would begin. If we fished without bobs, it would be first a few preliminary nibbles, then a decided bite on the hook, followed by a pull that sent a thrill through every fibre of the fisher-boy's body and never to be forgotten. A quick jerk—and a fine bass, or perch, perhaps, lay floundering on the grassy bank.

At noon we would have a good lunch, sometimes frying fish to add to what we had brought from home. Then to our sport again. The day would thus pass, the swift movement of time unheeded until the red sun's disk low on the western horizon admonished us it was time to start for home. Gathering up our long strings of fish and, comparing results in the day's catch, we would trudge back toward Adrian—now, it must be confessed, appearing more than twice the distance away it had seemed in the morning.

As we would wearily tramp and tramp, under our burdens of fish, often many pounds, we would sometimes wonder if they were not the same species as our Savior fed to the multitude—they so rapidly increased in weight as we trudged the long road. At last, so weary we could scarcely walk, we would reach home. Then we would vow never to go fishing to Devil's Lake again. A hearty supper would follow—and then to bed and sweet sleep.

In our dreams we would be on the lake shore once more, drawing the shining beauties from the limpid depths. We become so interested in the sport that we get too near the edge of the water and some companion jostles us into the lake. Struggling for life—we open our eyes, and lo! it is only father shaking us out of bed next morning after calling us for the past half hour without results.

Once out of bed, dressed and a good breakfast eaten, the fatigues and hardships of yester eve are all forgotten, and we are ready to make another expedition to Devil's Lake—that day if permitted. So resilient is the heart of youth that only the pleasures of the sport are now remembered, standing out in bold relief, beckoning us with persuasive hand to come hither again.

How He Earned First Sixpence.

My first sixpence was earned by hoeing corn in the garden, our father paying me and my brother in advance, as he was going away for a day or two. We were slow about doing the work, having the pay in hand, but we finally accomplished it. However, my pay was not in hand long, since my brother soon managed to wheedle it out of me, selling me an old powder-horn which I had long coveted.

I remember this money not only because it was the first I had ever earned but also because I earned and lost it to my brother just before a fair held in the Methodist church, which we all attended. It was the first time I had ever gone to a church fair; and, though I had no money to spend, like the other boys, I managed to get plenty of good things to eat and otherwise enjoyed myself.

I never forgot my first sixpence and the Methodist church fair. I was very young, but I learned several lessons from the circum stances connected with them—one being to keep my money for a day of greater need.

Berries Plenty Around Adrian.

All around the village of Adrian berries of every variety were plentiful and to spare. There were gooseberries, strawberries, cranberries, blackberries, and berries of any and all description. Everybody went berrying during the season—and that was of some length, owing to the numerous varieties. We first went after gooseberries over beyond the sand hills. So eager was everybody to get his share of Nature's bounty that we did not wait for the berries, especially the gooseberries, to get ripe; but hurried to the patches and gathered them while still very green, hard and bitter.

I never knew of a gooseberry hanging on the bush around Adrian until ripe; and I did not know what a ripe gooseberry looked like until some years later—after we had gone to a new locality. And then I did not know what they were until informed, they appeared so different from the little hard, sour berries I had been accustomed to picking.

The sand hills where we went to gather berries were on the bank of the river and had been partly washed away by the eating inland of the shifting stream. As a consequence there had been left, next to the water, a bank of clean, white sand about fifty feet high. Here, when we did not find it expedient to go nutting or berrying, we boys spent much of our time, digging and building sand houses, while we went bathing. Often we spent as much as half the day on this rural bathing beach, in the water and on the sand, climbing to the top of the sand hill, in the warm sunshine, and sliding down into the cool waters of the river, with a merry shout and a splash for each boy bather as he went down. Many of us spent too much time lying in the warm sand and hot sunshine, neglecting to vary it with an occasional plunge into the water. As a consequence we often had blistered backs and shoulders—until the skin would peel off, leaving the flesh very sore and painful to the slightest touch, ordinary clothing being an affliction.

Many sand martins and kingfishers built nests in the face of the sand bank, high up, out of our reach. Boring deep holes in the dry sand, they deposited their eggs where they were safe so far as we marauding urchins were concerned. We often tried to reach their nests by using long poles, but never succeeded in bringing one of them down or in molesting their contents.

Adventure With a Large Snake.

Once only did we meet any sort of success, and this time we succeeded in bringing forth from one of the old nests a large snake which had made his temporary home in the hole,—the birds having gone. When the snake came tumbling down upon our very heads, we lost no time in geting out of that neighborhood, seeing at a glance he was not the sort of bird we were after. The snake was probably more astonished and frightened than we; and he swiftly glided in the direction opposite to that we had taken, possibly returning to his squatter claim later. We did not stay to see.

War to the Death on Hornets' Nest.

A few rods away from the summit of that sand hill was a famous hornets' nest. It was hanging in a tree, twenty feet from the earth. In size it approached a peck measure. There, year after year, the hornets swarmed and reared their young, enjoying such immunity only as is insured by armed readiness for all coming foes. Of course we boys had a special spite against those saucy gray jackets, for the penalty of passing near that tree was a zip and a deeply implanted sting in such of our anatomy as might be most exposed.

Sometimes a more than ordinarily daring boy would approach very near. Then he would be set upon by numbers of the vicious insects; and instant flight to the waters of the river was his only hope of safety. If his legs were fleeter than hornet wings he was fortunate; but woe unto the boy who could not run like a coyote.

When one of the boys was stung his flesh around the poisoned part immediately swelled to ludicrous proportions. After a good laugh at the wounded comrade's expense, we all would prepare for retaliatory battle. Armed with balls of mud, clubs and stones, we would surround the nest tree and approach it gradually from all directions. In such attacks profoundest silence would be enjoined on all by the captain. Not a spoken word or even whisper would be permitted. Greatest care would be observed to avoid stepping on leaves or twigs. In this way we hoped to catch the wary sentinels off their guard and make our assault without return fire.

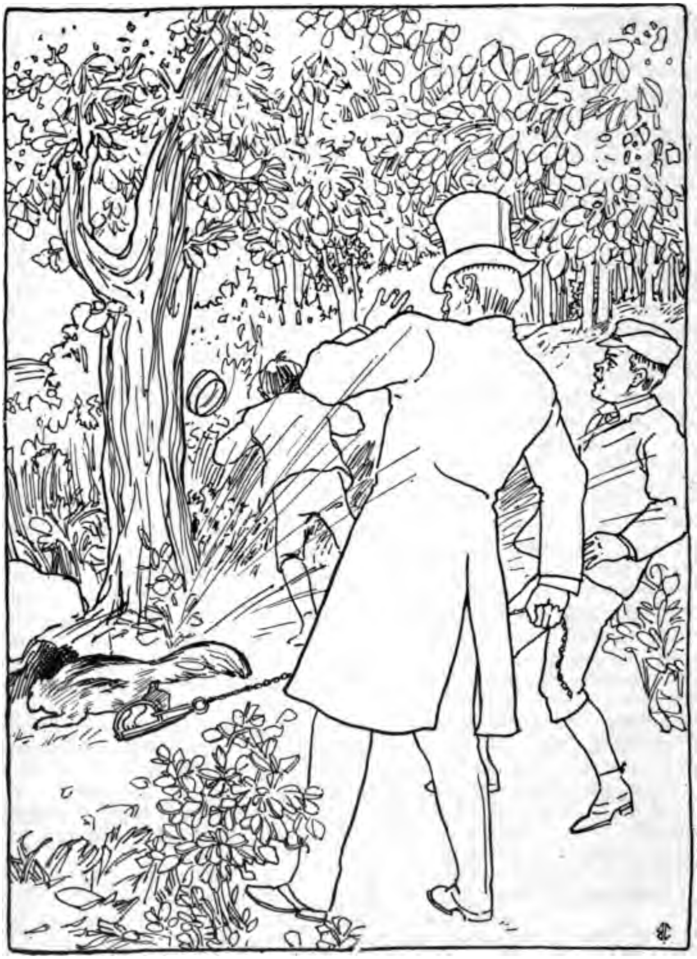
When near enough, if still unobserved by the enemy, we halted and, with muscular force twice augmented by bitter remembrance of venomous stabs oft received in the past, we hurled our shower of missiles at the nest. Our speed of foot, rolling and tumbling down that hill, was better than a circus and never to be forgotten by the participants. We traveled not only on our feet but on our hands and heads as well. It was any method to get to and into the water before the barbed hosts of enraged hornets should overtake us.

Generally, on such combined and well-planned forays we came off scathless; for the hornets, when taken by surprise, required some time to issue from their nest and reconnoiter before discovering the source of the bombardment. In the meantime we would be so well out of the way that the frustrated insects would generally turn attention to examining their damaged home and to making temporary repairs.

But their day of retaliation was sure to come—on some single and unprotected individual of our party passing near.

The Steel Trap and the Rabbit.

A comical event in which Henry Bidwell, a cousin, his father, a hardware merchant, and myself were the chief participants occurred while we lived at Adrian. Henry and I were out one day setting "figure-four" trigger traps for squirrels, when we discovered what we thought rabbit tracks leading to a burrow in the earth, at the root of an old tree. We determined to catch bunny, and we went to the store of Henry's father and borrowed a steel trap which we baited and set at the entrance of the burrow. Next morning we



AN ADVENTURE WITH A "RABBIT."

went to the spot and, sure enough, the trap had disappeared into the hole, showing that we had caught our prey. But, we were only small urchins then and we could not pull the trap by the chain, with the resisting animal on the other end, out of the burrow. Having tried in vain to get the trap and its victim to the surface, we went to the hardware store and solicited aid from Henry's father. He volunteered to help us himself.

Clad in the broadcloth and high hat usually worn by well-to-do merchants in those days, he accompanied us to the scene of our boyish anxiety. To make short work of the matter, he seized the chain, gave it a mighty tug; and, lo! the stubborn prisoner came forth.

But it was a large and healthful skunk!

And the way that skunk spread his sickening odor around in that vicinity was never to be forgotten. Henry and I did not mind our clothing getting an odorous spraying; but it was rather expensive perfume to Henry's father, for his costly broadcloth and tall silk hat had to be buried in the ground to remove the smell. And when finally dug up they were of no further use as clothing. In the meantime an experienced hunter had been paid half a dollar to kill the skunk and return the trap to the store. Getting sprayed with skunk perfume was not uncommon in those early days.

The schools in the pioneer days were not as elaborate as now. We received about three months drilling in the year; and the schools were of the subscription sort, public free schools having not yet been introduced in Michigan. The schools we attended were usually taught by some wandering teacher, who charged three dollars a pupil for the term. The school-house was any convenient room, large enough, that could be had for moderate rent, usually over some store in the village.

Bidwell Boys as Shoemakers.

As a consequence of our short school term we boys had more play time during the year than was good for us. Therefore, as soon as my brother and I were old enough father decided that we should undertake some regular work, learning a trade or business, and, at the same time, helping to care for ourselves and the rest of the family. Accordingly, we were taken into father's shoe-shop and put to driving pegs and manipulating the awl and other implements of the very useful craft.

Brother soon became proficient as a shoemaker; but my progress was slow. In truth, it was next to nothing. I made poor work of it, indeed. My seams were rail fence fashion, and I could not master the art of driving pegs home in the right place and without breaking them. However, though my brother learned more readily than I, his heart was not in the work. And, in moments of secret confidence, we both solemnly vowed we would never follow the trade for a livelihood.

Like all other boys, we much preferred running wild in the woods, gathering nuts, fishing, or skating in winter. This last sport was our particular delight during the long cold winters. Such smooth and solid ice as we had on our lakes and streams I have never seen elsewhere. With the allurements of such ice lying at our pleasure, we found it impossible to remain in doors when father chanced to be away. And, if he stepped out of the shop for a short time, we were very likely to be off for the ice-fields, where we quickly forgot the close confinement of the shop while cutting circles and figure eights or racing from point to point. The sorrows attendant on shoemaker's thread, awls, hammers and pegs vanished in thin air, and we were soon entirely engrossed in the exhilarating sport.

How Strap Oil Was Then Used.

But, alas! how often were we awakened by some playmate warning us that he had descried father coming down the hillside, strap in hand, to give us what shoemakers humorously termed "strap oil." My brother, being a swift skater, usually escaped; but I, not being so expert on the ice, generally stood still and took the consequences. I preferred to have it over and done with; for I knew my father would eventually catch me, if I ran.

While the "strap oil" would be applied to my back and legs copiously my playmates would stand at a safe distance and banter me with laughter and taunting remarks of a humorous nature.

The "strap oil" always had a very lubricating and limbering effect on the muscles of my legs, and I would lose no time in getting back to the shop—sometimes not stopping to take off my skates. When I would reach the shop I usually found my brother at his bench, very busily engaged on the work he had dropped to visit the ice.

Father, coming in later, his ire somewhat abated, and rather enjoying the quickness and shrewdness of brother, would generally let him off with a promise of a "strong dose" next time.

Mother Is Always Kind and Lenient.

While father was somewhat stern with us in his commendable desire and plans to "make men of us," mother was always very kind and indulgent, her solicitude going far to offset father's punishment of us,—which we deserved more often than we actually received. Mother took the closest interest in our childish sports. She made for us balls, and kites, and numerous other little things which go to smooth the paths of childhood. She aided in moulding our lead cannon and gave us pennies to buy powder—and then prayed that we might not injure or kill ourselves in our sports.

She was a model Christian mother; and I have not a doubt that her prayers many times saved us from death. Though extremely solicitous about our welfare at all times, she seldom found courage to deny us anything on which we had set our hearts in the way of amusement that was in itself not wrong. As a consequence, we were permitted to go on expeditions at an early age and do many things that other children (especially nowadays) were not allowed to do till twice our ages.

I recall that on more than one occasion I was saved from drowning by no agency known to myself—when no person was near enough to lend aid. I must attribute my salvation to my mother's constant prayers, invoking the watchful care of Him who holds the destinies of us all in His hands.

Unknown Agency Saves His Life.

When I was only seven years of age I was one day sporting in the river with other boys about my age where the water was not more than two feet in depth. We had improvised rafts of large blocks of wood and were paddling about on them in great glee. During the sport I had wandered away from my companions, a lone voyager on one of the blocks, till I found myself in deep water. Instead of clinging to my raft, my only thought was to rejoin my companions nearer shore; and, as the raft was unmanageable, being in a strong current, I plunged overboard. I immediately sank to the bottom, and remember little that afterwards transpired except my struggles to get to the surface.

When I regained my senses I found myself on the sandy bank of the river—but I shall never know how I came there. The boys, some of whom saw me go down, say that I struggled about under the water until I reached a shallower part, where I could get my head above the surface, and that I blindly groped my way ashore. It is certain that none of my companions aided me; for they all confessed they were too much frightened to do anything but look on.

A year or two later, after I had learned to swim, I one day went into the water alone, down by the red mill race. The canal at that point was wide and deep. For a few minutes I swam around near the shore. Then, looking across to the farther shore, I was seized with a desire to cross over there. How it would astonish the boys, I thought to myself when I should be able to tell that I had accomplished the feat—a hard one for the best swimmers.

It was always my nature to want to be alone when I had any new project to try or new ideas to work out, so that there would be no one to laugh at me if I failed. In this instance, it never entered my head that, should I chance to need help, there would be nobody near to offer it. I only thought of the danger of being laughed at, and not of the danger of a watery grave in the bottom of the canal. Therefore, I chose to make the trial then and there, with no onlookers to jeer, in case I did not succeed.

Getting my oozing courage up to a sticking point, I started. At first I struck out boldly and confidently; but had not gone far before I began to get frightened. But I still pressed on, and, after hard work, arrived two-thirds of the way over, when I entered a wide strip of long, snaky-like grass which lined the other bank. The grass began twining around my feet and legs, sending a chill to my very finger tips, as I thought of slimy snakes crawling and squirming in all their cold horrors. The slick, slime-covered grass felt for all the world just like a swarm of water serpents; and an irresistible faintness came over me.

Near Drowning in Wide Canal.

So far as I can remember, I lost consciousness at this juncture. But, at last, making a desperate effort, I partly regained my courage, and struggled on. I sank two or three times, though I took precautions to avoid strangling. Finally, once more sinking, my feet touched bottom. I had reached a point where I could wade. I struggled through the grass up the bank and fell on the ground exhausted.

I had made a narrow escape. Thankful that I was not lying at the bottom of the canal, I sat there, resting, and trying to decide what was best to do. It was about three o'clock in the afternoon. I was on one bank, and my clothing on the other. Go back the way I had come I could not think of without a chill of horror. The swim over had nearly cost my life; and I was too badly frightened to entrust myself in another attempt that day.

The canal locks, over which I could walk, were half a mile from the mill; and, so far as I could judge, I was about half way between or a quarter of a mile from the locks. I could not think of going down by the mill and crossing over, where it would have been easy, for I would certainly be seen by somebody, and the whole neighborhood would learn of my predicament.

Furthermore, it would be difficult for me to go either way without clothing.

And, in my state of nervousness, it would be dangerous to walk the narrow lock timbers, with the waters roaring below.

Nude, Hides in Brush for Hours.

After thinking it over for a long time I concluded to sit there, hidden in the bushes, until the friendly shades of night should fall. The bank from which I had swum was covered with trees and undergrowth; so I thought my clothing would be safe.

It was a long, long afternoon to me. I thought the sun would never go down. Wearily I peered from out my hiding place and watched its slanting rays as it slowly, very slowly, sank toward the western horizon. I tried to while away the tedious hours by watching the men working down by the mill and listening to the rumbling of the wagons on the road above the mill. I could see the boys crossing the canal on the locks,—on their way home from fishing or other sport; and I almost imagined they could see my nude form where I crouched in the bushes, and tried to hide more securely. I looked at the trees on the other side of the river to see if their shadows were getting any longer; and I strained my eyes toward the spot where I had left my clothes, to see if any stray cattle, hogs or other animals had disturbed them. But I thought I could see them, lying still safe where I had left them. As the shadows of evening drew on, I began to feel keenly the chill of the night air, and I watched the going down of the sun with still more restless impatience.

Finally, when the sun had at last disappeared behind the hill on the far bank of the river, I crept from my hiding place,

BIDWELL COMES NEAR DROWNING.

stiff in every joint, but happy that I could at last make my escape from the predicament into which my adventure had got me. The neighborhood boys all had gone home for supper. The employes at the mill had quit work and departed. I made sure of these facts before I started on my slow and cautious way down the canal bank toward the mill.

Reaching the mill without having been observed, I crossed over in safety and, keeping well in the shadow of the bushes, soon made my way to the spot where I had left my clothing. My garments were all safe, and I lost no time in getting into them. How warm and comfortable they were on my chilled and trembling body. Being dressed, I hurried down the road toward home, hugging my satisfaction in having swum the canal, gratified that I had come off safely, but wise enough never again to undertake the feat—at least not until the grass on the farther side had been cleared away.

Mother, seeing that brother and I disliked the shoemaking business, feared that we would leave home if father persisted in keeping us in the shop against our inclinations. She was as anxious as father for us to learn some useful trade, but she could not entertain the thought of our leaving home to learn one. She wished all her children to grow up under her direct oversight and loving care. Therefore, she prevailed upon father to learn the candymaker's and baker's trades, so that we boys might be taught them, hoping that we would find them more congenial than shoemaking.

Father Learns Another Trade.

Accordingly, settling up his shoemaking accounts and closing out the business, father went to Detroit to learn the new crafts. After an absence of six weeks he returned home—with the new trades in theory, if not in actual practice. He pleasantly informed brother and I that we were no more to hammer the lapstone, drive pegs or push the awl through boot leather. Instead of pinching toes in future, he said, we would tickle palates, expand appetites and diffuse general joy among the urchins of the village whose most extensive experience in that line to date had been with sticks of "barber-pole" candy, they never having heard of the more elaborate confections.

But, had it not been for the plain "molasses candy" that we made for the first six months, we would have lost money. That paid expenses and offset what was lost in burning and otherwise spoiling sugar.

Bidwell Becomes Candy Peddler.

It was decided that I should try peddling candy from house to house and in the stores, workshops and other places. Mother fitted me out with a clean face, clean hands, neat clothing and a brand new tin pan. Thus equipped, I started on my new enterprise (which was to continue for the succeeding two years).

I was always a diffident boy, and at first I was shy in approaching persons and offering my confections. But I loved my mother and had every confidence in her. She impressed on me that it was manly to work and to do anything that was honest. So I soon plucked up courage and went ahead with a stronger heart, determined to give the occupation a fair trial and at least earn my own livelihood, even though I could not contribute much to the general support of the family.

As a consequence of this resolution business at once began to prosper with me, and nearly every day I returned home with an empty candy pan and equally light thoughts and a happy heart. I soon established a regular route among the shops, stores and dwellings. My customers learned to like me and my candy and saved their pennies against the time of my coming. My mother always sent me forth scrupulously neat and clean; and my appearance seemed to inspire all my more particular customers with the belief that my candies were also clean and wholesome. If they had the money they never hesitated about buying.

Notwithstanding my kindly treatment from the start, I had some varied experiences,—some amusing, others not so pleasing. A certain clerk in one of the hardware stores was a great joker. One morning when I called he was feeling particularly jovial and was ready for all sorts of pranks. After talking and laughing awhile at my expense he seemed to be taken with a remarkably bright idea and asked what I would charge to let him have one good kick at my pan of candy.

I promptly answered: "Twenty-five cents."

He probably had not expected so ready a response, but he had been caught at his own game and gave me the money. Then, by his directions, I held the pan high up, at arm's length, and he drew back his foot and gave the bottom a swift and vicious kick which sent the candy flying all over the store. As it was a cool morning, the candy was hard and brittle when it left the pan, but soon the artificial heat in the store softened it and the pieces which had lodged in kegs of nails, links of chains and elsewhere became sticky masses which were anything but agreeable to the touch.

The scattered candy clung closely everywhere and dissolved in luxurious sweetness. How the clerk got himself out of the "scrape" with his employer I do not know; but I am inclined to think there was plentiful disgust in that store for some days—till all that sticky candy had been removed.

Meanest Smith He Ever Knew.

During the two years that I sold candy in this way, I came in contact with but *one really mean man*. He was a blacksmith with a shop on the main street of the village, which I was compelled to pass every day. But even this man's meanness was of notable value to me in after years. When this fellow would catch sight of me on the street he would call out, pretending that he wanted to buy candy. But, when I would approach, he would abuse me in the most insulting language, calling me a lazy little rascal, loafer, thief, and other hard names, saying that I was on the road to ruin. That I would soon be smoking and drinking, and that by the time I was twenty I would be staggering about the streets, a hopeless drunkard. He would ridicule my business, saying that I had better do nothing than sell candy in that way.

Two or three times I went awav from his door crying—not because I was ashamed of peddling candy but through fear that what he had predicted would some day prove true. I did not tell my mother about it; for I kept the unpleasant things from her as far as possible. And I was not long subjected to this vile treatment; for I avoided the mean fellow's place, after I had been so abused three or four times.

And, in the meantime, I had taken a determined resolution that none of the vicious things he had predicted for my future should ever befall me. I made up my mind firmly that I would never touch a cigar or a glass of liquor and that I would try to be always honest and truthful. Those resolutions have been the rule of my life ever since.

Once or twice my lips came in contact with the vile taste of whisky while I was selling candy. On very hot days, when parched with thirst, I sometimes was compelled to step into a saloon to get a drink of water, and there I drank from the glasses in which whisky had been poured. The bare taste still clinging to the dirty glass was enough for me. It made me almost sick.

This mean blacksmith and his wife had no children. It was fortunate, perhaps, that Nature had so passed them by. For, having obtained a little orphan girl to rear as their own, not more than six months had elapsed before they both were arrested for base cruelty to the helpless orphan. At their trial it was proven that they had unmercifully whipped the child for the most trivial reasons; and, having lacerated her flesh with gashes and bruises, had compelled her to sit on blocks of ice sprinkled with salt. Neighbors had been awakened in the middle of the night by this little girl's screams of agony.

The brutal blacksmith and his wife were not sent to state's prison, as they deserved, but they were heavily fined, and the child was taken from them. Thereafter they were heartily despised by all decent persons.

Such was the character of the only man who ever really mistreated me while I was a candy vender.

Two Inherited Characteristics.

Of two traits peculiar to my character I seem to have inherited one from my father and the other from my mother. One of these traits is to pay my debts in full, no matter how long delayed by sickness or misfortune. This was my father's strongest characteristic. He moved from Hudson, Michigan, to Adrian in 1840. After he had got settled in his new home he one day remembered that he had forgotten to pay a debt of fifty cents due a man in Hudson. We had no horses, only oxen. Starting at sunrise one morning, father walked all the way to Hudson, eighteen miles, paid the debt, and tramped home again that night. In those days the forests were infested by wolves and bears, with an occasional panther, and the roads were mere paths or blazed trails which wound in and out among the swamps and other natural obstructions. But father went to Hudson and paid that half dollar, taking all the chances against his safety.

My mother was noted for her silence, patience in suffering and her perseverance. She was an invalid the greater part of her life; but she suffered in silence, always cheerful and never complaining. As an instance of her self-control, I shall never forget an incident that occurred when I was fourteen years old. In those early days manufactured soap was unknown in the West, and the women of each household made "soft kettle" soap ever spring and fall, cut it into blocks or bars and laid it away to dry and harden before using. Of course the children always helped at soap making. We boiled it in a large kettle hung on a pole over an open fire in the back yard.

He Scalds His Mother's Foot.

On one occasion when my mother and I were making soap she sent me into the house to bring out a two-gallon kettle of boiling water. When I attempted to put the kettle down beside my mother near the fire it upset, filling one of her shoes and deluging her foot with the scalding water. Without screaming, she said to me, in her usual quiet tones:

"Go and get a pail of cold water and some dry, soft cloths, and bring them to the barn."

I did as instructed, marveling at her in evincing so little excitement,—when she must have been suffering excruciating pain.

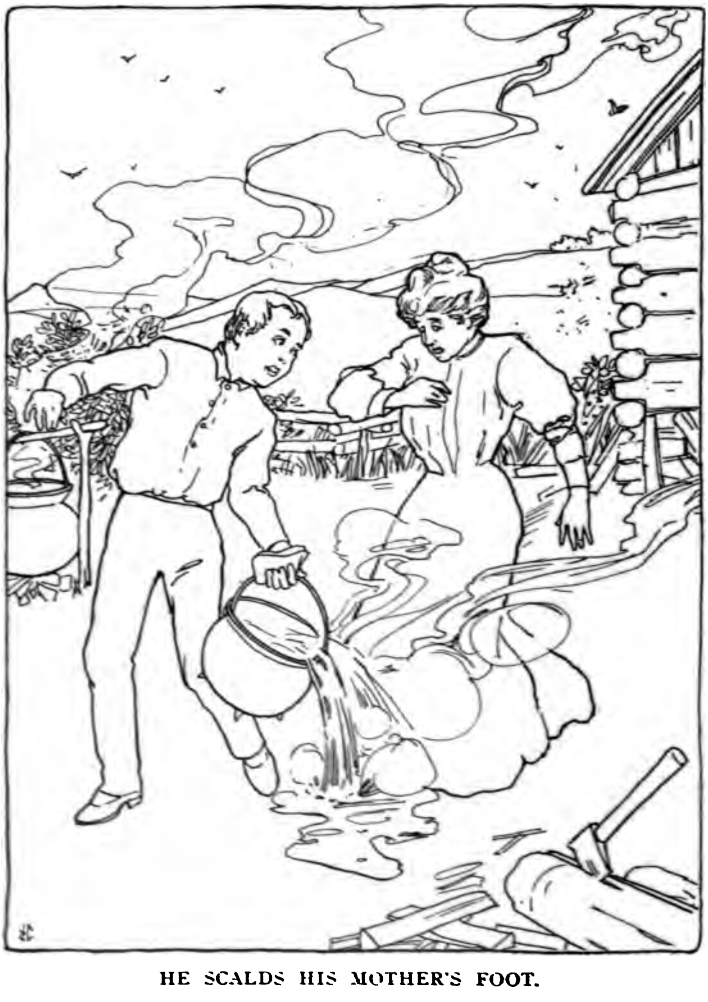
She wrapped her scalded foot in the cool, wet cloths and told me to go to the house and tell the rest of the family that she would not come to dinner. I did so, causing no comment, since mother often fasted a whole day on account of her ailments. It was some hours later before the family learned of the accident.

Mother was a good nurse, and the fire and pain had mostly been removed from her foot by nightfall. But through all those long hours I was in an agony of sorrow and regret at my lack of greater care in handling the kettle. But mother did not then nor ever afterward say an unkind word to me regarding the accident. She and I loved each other very dearly, and until I was nearly grown we were much together; for I helped her in doing the work common about the house and premises which fell to the lot of the women in those early days.

Is Sorry For His Mischief.

Though my mother was uniformly kind and considerate of my sensibilities, I am sorry to confess that I sometimes—not often—did things of which I ever after was ashamed. One rainy day, while we lived at Adrian, mother had some women friends calling at the house. To get us out of the way, she sent the two younger children and myself upstairs.

It was in the summer time and there was a stovepipe hole in the middle of the ceiling of the room in which the callers sat talking to mother. The stove having been taken down, this hole was open, nothing having been placed over it. After amusing ourselves otherwise for some time, we children spied the open hole and conceived the idea of using it with which to play a prank. We hunted around till we found an old shoe. Tying a string to it, we gently lowered it through the hole



HE SCALDS HIS MOTHER'S FOOT.

and dangled it about just above the heads of the astonished guests.

Mother came to the foot of the stairs and gently asked us to stop our foolish play. We did so for a time, but soon tried it again, drawing the shoe up and down through the hole several times.

The guests soon departed—whether in disgust at our rudeness I never learned—and mother came up the stairs as we started down. She silently made her way up and, sitting down on the top step, began crying in that quiet way only her own. She did not say a word, but it was plain to us that she had been hurt and mortified beyond even her patience to endure without some outward sign.

Those silent tears saddened our hearts and subdued in us the rampant spirit of mischief more than a severe whipping would have effected. I never forgot the incident, and to this day I feel mean about it. I was but eight years old, but not too young to feel keenest regret at having sorely wounded so good a mother.

At Adrian court week was a lively time with us. Then I had no trouble in disposing of any quantity of candy. The farmers and their families came in from the country in hundreds, and legal affairs were mixed with general enjoyment and festivity for several days.

Muster Day in Adrian Village.

General muster or military training day, which came round once a year, was also a gala occasion for everybody. The farmers and their families came in from all the country round, bringing provisions and dainties of every description. Several long tables would be erected and above them would be built a canopy of green boughs, cut from the leafiest trees to be found. This roof of green not only kept out the sun and, perhaps, a light shower or two, but it lent an air of festivity not found indoors. While the men would be away going through military maneuvers the women and young folks prepared the dinner. The tables would be laden with appetizing foods and dainty pastries that made the mouths of the boys and girls water in anticipation.

But, sad to relate, the boys always had to wait until the second or third table, and by that time the best of the eatables would be cleared away by the hungry hundreds who had preceded.

In the morning the men would gather in the court-house square, where the muster roll would be called. This would usually consume considerable time, for it was hard to gather in the stragglers. Many members of the company would wander away, under one pretext and another; but, generally, they were intent on getting a drink of liquor from some saloon in the neighborhood. The village of Adrian, I am sorry to say, afforded many such places; and, when a squad would be sent out to bring in a delinquent, the missing militiaman, being found, would induce his captors to make several stops on the way, perhaps. So, altogether, it was a slow process. At last, the company having been got together and formed in line, they would parade through the streets like the proverbial "awkward squad." They would be armed with shovels, pitchforks, hoes, axe-helves, etc., in variety to suggest the movements of a band of rioters more than that of a company of our country's defenders.

After marching in this grand parade and unsuccessfully attempting a number of tactical movements, the soldiery, many in a hilarious condition, would return to their starting point, disband and make a concerted charge on the dinner tables. We boys, with hungry eyes, would watch them eat; and, as we often remarked, if the rapidity with which those good things disappeared marked their valor, they certainly were an unexcelled band of warriors brave. The celerity with which those eatables vanished, we supposed, was due to the exhaustion caused by the very arduous duties they had just performed in the ranks. While they ate we boys indulged many like sarcasms.

Those old-fashioned military musters long ago ceased; and they are known to the present generation only in the pages of pioneer history or from ancestral folklore. So far as the military training extended they did no good. The men learned nothing about the real art of war; for, as I before intimated, they could not be kept in line long enough to call the roll, and could not be controlled when they were in line. Their minds were not on the commands of the directing officer but were intent on the good dinner to come or some horse race to be run later in the day. Most of them looked forward to the occasion as a day for a general "spree." Such a thing as discipline, as we now know it in military matters, was never thought of. In the morning preliminaries the officer of the day would call out name after name without eliciting a response. The missing men would usually be somewhere in town but not at the military stand. Occasionally a neighbor or an acquaintance would answer for a temporary absentee. Now and then some member of the company, after responding to his name, would not step forward, as the manual directed. Then some such colloquy as follows would ensue:

"Take your place in the line, sir."

"Can't do it, squire. I'm too busy trading horses."

"Take your place in the line, sir," the officer repeats.

"Well, General, as soon as I finish this trade I'll be on hand."

And, with that remark, the delinquent would continue what he had been about, entirely ignoring discipline and respect due his superior.

Taken all in all, those musters and so-called maneuvers were a travesty; and when they were discontinued the state and the people were the gainers—if not in a military way, at least in morals and good manners.

Whole Town in a Game of Ball.

The inhabitants of Adrian were a fun-loving people indeed. They were always ready for any sort of a frolic of an innocent nature. One of the principal amusements indulged in by old and young, well-to-do and poor, anybody and everybody was ball playing.

This exciting sport was indulged in at every season except winter and whenever there was leisure to be had. There was little caste in the society of those early days, but such as there was would always be laid aside when there was fun to be enjoyed, particularly a rough-and-tumble game of town ball.

At the close of the long summer days, when the coolness of evening drew near, and the streets were almost deserted, when the farmers and other workers had all gone home, and quiet reigned, a passing stranger would have been forcefully reminded of Goldsmith's "Deserted Village." But, perhaps, had he lingered there for half an hour, he would have had ample reason for believing the village to be enchanted, so quickly would it spring into jubilant life, rapidly rising to hilarity and riotous rushing to and fro.

This would be caused by the starting of a game at ball. Some person, equipped with a ball and, perhaps, an axe-helve, would step out of a store or a dwelling, toss the ball up, give it a sounding bat, sending it soaring up the street, and thus the fun would open. Instantly scores and hundreds, intent on joining the game, would pop out from the doorways along the street.

Every comer would carry an improvised ball bat of some sort,—broom handle, stick of stove wood, a club of any kind,— and all would make a grand rush for the falling ball. When the flying sphere would strike the earth a score or more of eager players would be scrambling for its possession. Some lucky person would get it, back to a clear spot and send the ball again singing through the air above the heads of everybody. Soon the streets would be swarming with men, women, and children, all wildly scrambling and running and shouting at once.

Some swift-footed player would get the ball again and prepare to strike it; but probably his bat would fan the air, and some other would give the stroke that would once more send the sphere hurtling. In the violent scrambling for the ball and the many attempts to hit it when tossed up numerous shins, arms and even heads would be bruised; but such hurts were counted as naught, healthy shouts of derision and peals of laughter rising in a deafening din on all sides.

Such play was not indulged in with gloves on, but everything was accepted in the best of humor. It was considered very unmanly and unwomanly to get offended at anything pertaining to the sport, however rough it might be.

The game would end with darkness, and some would return to homes and to bed; but many of the men and boys would hie away to the river for a cooling bath after the heating sport.

We usually went swimming at a point in the river called the "Big Bend." Here the fun of the evening would be continued in swimming, diving and ducking each other, while the merry shouts of the swimmers rang and and echoed through the hills back and forth far up and down the river.

Neck Broken by Stovepipe Hat.

It was on one such swimming occasion that an accident happened to one of our party that we never forgot. We had placed a spring-board reaching out over the deepest part of the "Big Bend." It was a common practice for the boys to go out on the far end of this board, spring it up and down several times, leap into the air, turn a somersault, and dive head foremost into the deep waters.

One evening a resident of Adrian, thirty-five years of age, accompanied the boys to the "Big Bend." When all were ready to go into the water he proposed to introduce a novelty in the manner of diving from the spring-board. Taking up his tall silk hat, which we called a "stovepipe hat" in those days, he placed it tightly on his head, ran out on the spring-board, and, aided by all the elasticity of the long plank, sprang into the air and plunged into the water, head downward.

But when he came to the surface, which was almost immediately, he was dead.

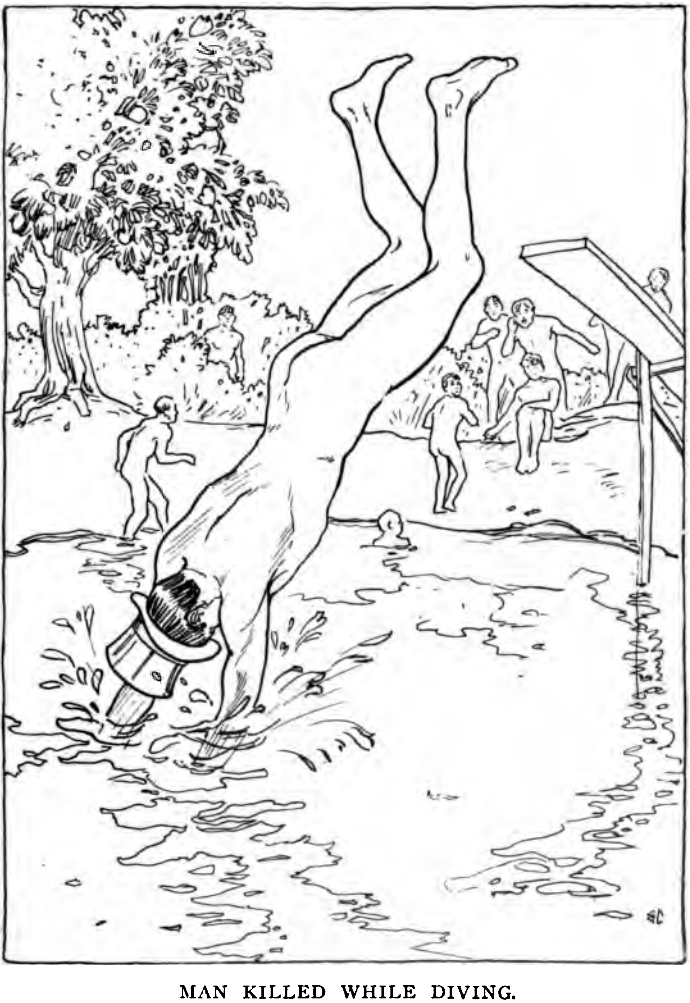
He had probably been killed instantly. It was never positively known what caused his death; but it is supposed that his tall hat turned just as his head struck the water and broke his neck. Everybody was so frightened for the time that no intelligent investigation was possible.

The body was taken from the water, dressed and carried on a blanket used as a stretcher back to the village. The sorrowful news of the catastrophe had preceded us, and men, women and children in a multitude came running to meet us as we entered the main street at the edge of town. All out of breath, they asked us a myriad questions, unable to realize that our comrade, who but a few minutes before had appeared on the streets full of buoyancy and merriment, could really be dead.

Silently and sadly we bore the cold body to the home of the dead man, where there had been only happiness and content an hour before. His family were struck dumb with astonishment and grief. In their sorrow-crazed condition, they refused to believe him actually dead.

But, alas! it was true. He was dead. His spirit had taken its flight to that unknown land whose boundaries geographers have never defined and whose broad expanse reaches far beyond the limit of mortal eyes, whose only messengers are the fiery comets, whose telegraph is the winged lightning which lighteth the earth with supernatural glory and cleaveth the sky in its passage.

This was the only fatal accident that had happened since the death of Harry Norton, by falling across a log floating in the water beneath a butternut tree in which he was climbing. And it had a very depressing effect on the spirits of the villagers. In those early days of small communities the settlers were more closely drawn together and held each other in more friendly regard than in our great cities of the present day, where thousands of souls may pass away in a single week and



MAN KILLED WHILE DIVING.

not be regarded by the community in general. Everybody knew everybody else and, in the common struggle for a livelihood and for protection from the Indians and the wild animals of the forest, men and women regarded each other more as brothers and sisters than as strangers, passing acquaintances or social friends, as nowadays.

It was so healthful in and around Adrian that few deaths occurred. For months at a continuous period the gates of the old burying ground did not swing upon their rusty hinges, save to admit the living,—those who wished to spend a quiet hour at the mounds above their dear ones or in silently contemplating the last resting place of others they had known in life.

This shocking accident at the "Big Bend" spread gloom over all the community. Everybody attended the funeral and followed the coffin to the grave in the old cemetery. Having witnessed the sudden death of our grown-up comrade, we boys went no more to the "Big Bend" that summer. We were superstitious, it must be confessed; and we feared that the spirit of the dead man still hovered there. To bring that particular swimming resort into further disrepute, another accident occurred there late that autumn.

Peculiar Death of Insane Man.

An insane man was found there one morning, near the middle of the river, hanging to the limb of a tree that had lodged there. The tree, a large one that had been washed up by the roots, was almost all under water, only that one large limb being above the surface.

The man was found hanging by his hands, bobbing up and down in the swift current—dead.

It was never known whether he had drowned or had been chilled to death. When the body was approached in a boat, it was found that the hands were stiff and fixed, just as the man had clung when death came. The body was nude; and it was thought by some persons that the poor demented unfortunate had emulated the swimmers of summer and had attempted to go in bathing when winter was almost at hand.

When we boys went swimming next summer we tramped a mile down the river to the brickyard or to the mill dam—the latter being the favorite place for those learning to swim. Here the river made a decided bend, nearly doubling on itself, and forming a peninsula, which the race of the mill, crossing its neck, cut off into an island. This island was about ten acres in extent and was covered mostly with small hickory trees, buckeye and elm saplings and other small growth. This soon became a general resort for us in the hot summer days. Here we could swim or play under the shade unobserved, unmolested, and at pleasure. One of our favorite sports was making a "teeter" of a hickory sapling. This we would do by bending down the young tree, attaching a rope to the top and permitting it to go up and pulling it down again, back and forth, while two or more riders enjoyed the novel sensation so much loved by children.

Bad Cats Are Hanged by Boys.

When some unfortunate household cat had fallen under the ban of displeasure for killing young chickens, stealing from the cupboard, and so on, and had been court-martialed, we would bring him to this island for execution. A rope, two or three feet in length, would be attached to the criminal's neck and the other end tied to the top of a bent hickory sapling, which had been previously tested as to its elasticity. When all would be in readiness, and the doomed cat had uttered his last plaintive meow and said his last prayer, the word would be given, and up would spring the released sapling, jerking the poor Thomas into eternity with but an instant's pain and no struggling worth mentioning.

Even if the unfortunate Tommy had possessed the nine lives commonly accredited to him, all would have departed as that sapling's top went skyward, with a twang and a swish that betokened a certainly broken neck, if not a head almost severed.

In maturer years such boyish pranks appear cruel, it must be admitted; but the heart and mind of a boy are beyond understanding, even to ourselves, after we have grown older.

Midnight Tramps With Strayed Cow.

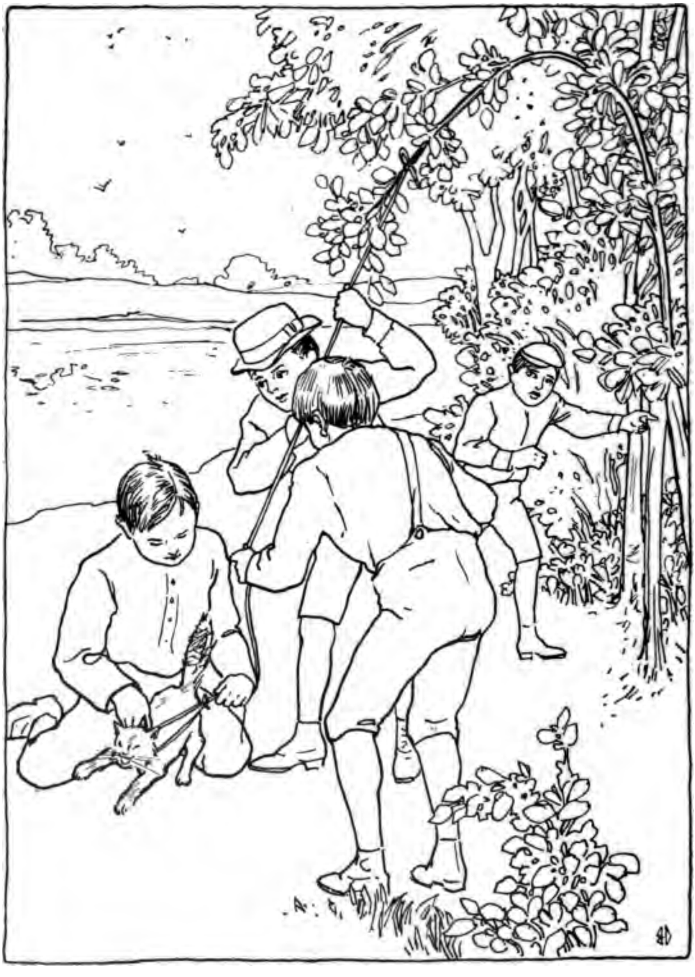
One of the constant laments of my young life at Adrian was having to trudge away from home fully eight miles and back again, alone, to fetch the ever-straying black milchcow which father had bought from a farmer. If the cow was not closely watched she would return to her former home about once in two weeks. And that meant a sixteen-mile walk for me before that cow would be safely housed in our barn again,—about midnight.

I even now recall with an unpleasant sensation those long night journeys homeward with that cow, trudging wearily beside her with my hand on her neck to aid in controlling her movements and to prevent losing her in the darkness. However, though then only eight years old, I do not recall ever having felt afraid. I was often very tired—but fear was not one of the unpleasant accompaniments of those long tramps through the sparsely settled country. Mother had always taught me that belief in ghosts was nonsense; and I never dreamed of fearing anything else. But, though I tried hard to have no thought of ghosts, I had an experience one night at home that set me thinking for a few minutes.

Runs Against a Ghost in Barn.

I had been sent out to the barn on an errand. The night was very dark; but, being familiar with every corner of the premises, I did not take a light. I had reached the middle of the wide barn floor when I ran against something soft and white and which swayed away from me for a moment and then gently came toward me again. I was taken much by surprise, but I did not run, knowing that fleeing would not mend matters if it really was a ghost.

The thing silently came forward, gently touched me and started back a second time.



BOYS HANGING A BAD CAT.

All at once it flashed into my mind that it was a large white pillow which we had been using in a swing that day and had forgotten to take to the house. So my only chance for a ghost scare vanished in thin air.

Boys Blow off a Steam Valve.

Even boys who intend to do right in a general way often get into mischief. I recall one thoughtless act of which we were frequently guilty. There was an iron foundry and machine shop in the village. Back of the engine-room was a pipe and valve through which the engineer blew off the steam when he wished to clean the boiler out. Seeing him blow off the steam one day, we enjoyed the rush and roar; and in a few days we went around back of the engine-room, while the engineer was not near, and turned the valve on. We enjoyed the fun as long as we dared, then shut the valve and took to our heels, before the engineer could reach the spot. We delighted in speculating about the astonishment which the engineer must have felt when he beheld his steam gauge rapidly sinking toward the low-pressure mark, before he surmised what had happened.

The valve was at the bottom, and water came out with the steam, making it a dangerous trick to play; for the boiler might have been blown up, had the water run too low. Besides, I have since often wondered that we little rascals were not seriously if not fatally scalded by the hot steam and water spurting out in a seething deluge.

Freak Cats With Only Two Legs.

The greatest curiosity in Adrian when I was a small boy was a pair of two-legged cats. They were genuine freaks, and I have never since heard of anything like them. They were perfect in every respect except that they had but two legs each, placed exactly in the middle of their bodies. They walked like a hen, very awkwardly, but managed to get along slowly. When I first saw them they were about a year old, and I frequently saw them during the succeeding two years. We boys had many heated disputes about those cats, some of the more knowing ones holding that the cats had not been born in that condition but had been made so by surgical operations. This was not true, as an examination of the bones showed.

As a consequence of our arguments, we sometimes tried our finger-nails on each other's faces and pulled hair in a lively way. But such boyish misunderstandings always quickly passed out of mind; and we would make friends with each other, the whole party going for a slide down the sand hill or to engage in some equally hilarious sport.

Negro Samson Wonder of All.

There lived in Adrian an old negro whom we called Samson, because of his extraordinary size and strength. When a young man, Samson had been a slave down South; but he had escaped from his master, and all efforts to retake him had failed. There were many abolitionists in Adrian and vicinity, and they protected all escaped slaves who came into the neighborhood. If a negro volunteered to return to "Dixie's Land" no abolitionist objected, but this seldom occurred.

Now and then a slave-owner would locate his property in Adrian and would come there in an effort to coax the slave to go back with him. The planter who had owned Samson once came after him. Samson was then employed in a soap factory. Word came to him that his former master was in town, looking for him. He sent back the message that if they wanted him they must come and take him.

This message was a Delphic oracle to Samson's owner, but he and his friends decided to go to the factory and learn what it meant. The factory was located at the lower end of the town, near the river. On entering the factory the party found Samson engaged in boiling down strong lye in a great kettle supported on brick arches. The kettle was steaming and foaming, filling the room with a heavy alkali-laden mist. Where he stood, over his caldron of lye, the big Samson suggested to the imagination Satan himself, stirring his molten draught for the throats of the damned and for slaveholders in particular.

Showing a broad row of ivory teeth in a wide grin, Samson picked up a large ladle, filled it with the boiled down alkali, and called out:

"Come on, Massa! Ise ready—ready to be taken back yonder."

But "Massa" and his friends did not care to accept the invitation. That alkali would have peeled off the skin and the flesh wherever it touched. So they beat a hasty retreat, fearing the big ex-slave would send a shower in their direction. As they ran out of the factory their ears were greeted by demoniac laughter, sounding for all the world like that we imagine must be heard from the Bottomless Pit. But it was only Samson chuckling over the success of his ruse.

Violin Music Minus Fiddle.

Samson was a performer on the violin; and he could make the most entertaining music on two sticks, using one as a fiddle and the other as a bow, while he made the sounds with his lips—in almost exact imitation of the notes of the stringed instrument. Taking his seat on a barrel at the corner grocery, he would take the two sticks and, preparatory to beginning the mock music, would go through the motions of tuning the imaginary violin. Putting one stick against his shoulder, he would draw the other across it slowly, then twang the imaginary catgut with his thumb and finger. The first sounds so evoked would be out of proper pitch, purposely; but, by degrees, the ingenious performer would bring the sounds to the right tone, all the while sawing away, twanging the supposed strings and turning the keys (which did not exist).

The strings having been properly tightened, Samson would produce sounds which equaled the best violin tones and harmonies I ever heard from the hand of even masters of the bow. He would thus produce popular airs, waltzes, other dancing music and, in fact, any and all harmonies common on the violin. Soon a group would collect about him, which would swell to a multitude, as the wonderfully-made music grew louder and stronger and quicker in its movement, and the old ex-slave warmed up to his impromptu concert, or recital,—call it what you will.

What must have been the wonderful organization of the brain beneath that thick and heavy thatch of kinky wool!

The throat and thick lips which sent forth those harmonies, entrancing the ear and mind of the listener, apparently were not unlike those of any other black man; but God had given to Samson genius which no other negro I ever knew possessed.

Muscular Feats Astonish Town.

In addition to his musical gift, Samson was a giant in strength. He would amuse the villagers by the hour performing feats of lifting and other demonstrations of power. He could pick up a barrel of flour, place it on his shoulder and walk off with it without much apparent effort. One of his exhibitions that was most astonishing was "bucking" at a grindstone. That is, he would stand a common grindstone up on a box or barrel, step back twenty or thirty feet and rush forward, striking the stone with his head, full force. For this he would usually be rewarded with a glass of whiskey. Then he would be primed for further fun. And the loiterers would take full advantage of his willingness to amuse.

Sometimes the stone would be removed just before Samson, bent nearly double, would reach the spot where it had stood. Then he would miss it, of course, and go sprawling on the earth beyond. This would bring forth from the bystanders a roar of laughter and shouts of derision. But Samson would take it all good humoredly, laughing as loudly as anybody at his own mishap.

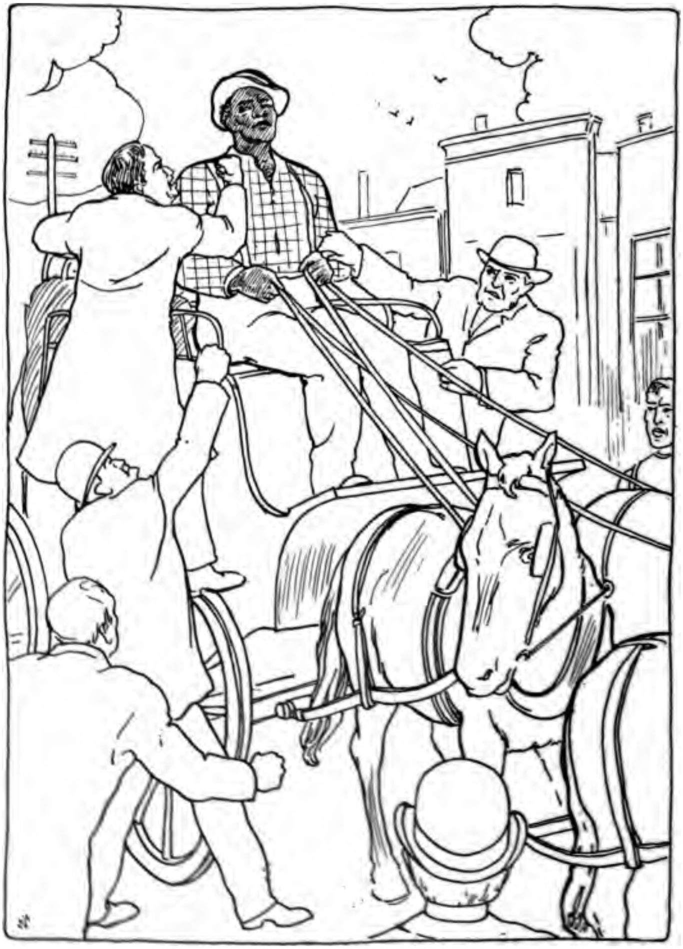
At another attempt, perhaps, a box would be placed in front of the grindstone; and Samson, like an ancient battering-ram, would strike the box with his head and smash it into kindling wood or send it rolling and bumping a rod away.

After each exhibition of his butting prowess Samson would be invited to adjourn to the bar of some near-by saloon. Therefore it would not be long before he had taken more drink than was good for him, but he would never stagger or lose his perpendicularity, though he might become lightheaded and partially irresponsible for his actions.

Samson Usurps the Jehu's Seat.

But Samson was never vicious when under the influence of liquor, though he might do things that were of a serious nature to others. On one occasion, I remember, an old-fashioned four-horse stage-coach was passing down the street at a sharp speed, the well-groomed, high-spirited horses in full trot. The driver, reins well taut in hand, sat on his high seat, whirling and snapping his long whip in all the pride which characterized the stage drivers of those days.

Samson, partly intoxicated and full of pranks, stood on the street and watched the driver. Seized with the desire to take the proud Jehu's place on the stage box, he ran forward, mounted the coach at a spring, caught the driver with one hand by the back of the neck, as a kennel-keeper would pick up a puppy, dropped him to the ground, seized the reins with



TRYING TO DRAG SAMSON OFF COACH.

the other hand and, throwing his head back in mock haughtiness, drove the stage in triumph to the front of the inn, where it usually stopped. There he drew the prancing team up in fine style; but he did not descend from his seat, as was the custom of the driver. He was so pleased with the seat that he refused to leave it.

After the dismounted driver had exhausted his coaxing powers, he appealed to the sheriff. But the sheriff could not get the usurping Samson to come down, though he tried both persuasion and muscular effort. He was no match for Samson in a scuffle, and he did not care to resort to the use of weapons for so trivial a matter. Having been sadly worsted in his single-handed attempt to dislodge Samson, the sheriff called to his assistance ten or fifteen men standing about. Thus reinforced the officer renewed his attempt to get the big black driver from the stage seat. By dint of seizing his arms and legs separately and making a combined pull, the posse finally got Samson to the ground; but, with one mighty effort, he broke away from them and remounted the seat.

All the while it was a good-natured scuffle and trial of strength and muscular prowess between the big black man and his would-be captors. There was never any intention on the part of the sheriff and his helpers to do Samson harm.

After having been pulled to the ground two or three times and as often remounting the coach seat, Samson finally gave up the struggle and yielded to arrest.

Shakes Off Men, Ropes and All.

Then it was decided to take him to jail. Sending for a new rope, the sheriff cut it into short lengths and instructed his posse to bind Samson, hand and foot. But the men found this a more difficult undertaking, even, than getting him out of the stage seat. They several times got Samson down on the ground and partially tied him; but, like his namesake of old, who carried off the gates of Gaza, the powerful ex-slave would rise in his might and shake off men, ropes and all at a single effort.

The struggle grew fiercer and fiercer, new men taking the places of those who had become exhausted. They swarmed like bees around the redoubtable black man, a new-comer taking hold wherever there was an opening and adding his fresh strength in the combined effort to overcome this lone combatant. After, perhaps, an hour of such resistance, to show his mighty strength and prowess in wrestling, Samson at last yielded, and he was quickly and securely bound. Placing the prisoner on a cart, the sheriff and his posse, in triumph, drove to the lock-up.

No one had been really hurt in the rough-and-tumble, and Samson showed no disposition to do anybody harm after he had been started toward the jail. He had always been made to feel that everybody in Adrian was his friend, and that was true, so far as I ever knew. Having been vanquished, Samson acted well the part of a noble-minded foe and acknowledged defeat with good grace, knowing he would be well taken care of in the hold-over. In a day or two he was permitted to come out, thoroughly sobered, happy as a lark and ready to assist anybody who cared to call for his enormous strength.

Ex-Slave Proves Useful Fireman.

Samson made himself useful to the villagers in many ways. Whenever there was a fire, he was the man called on to work the old-fashioned hand pump, after the white men had become exhausted. He could do the work of two or three ordinary men, and he would remain at his post long after others had fallen back, completely worn out. Sometimes he would work one side of the pumping levers alone, while six or eight men were puffing and blowing at the other side. Calm and collected, he worked away, with apparent ease, undisturbed by the tumult around him. On such occasions, as on no others, could his leviathan strength be estimated at its true value.

He was a remarkable negro in many respects; and, though his memory remains unsung, except by the narrow community in which he made his Northern home, after escaping from slavery, well might he have been placed on the plane with "Blind Tom" and other wonderful black men of world-wide fame. I doubt if "Blind Tom" was a greater natural musician, and he lacked other attributes of interest that attached to old Samson of Adrian village.

Bidwells Move to Toledo, Ohio.

Our family moved to Toledo, Ohio, in 1848. Toledo was originally situated on a hill, from twenty to one hundred feet above the river. But, after years of persistent labor, it was cut down to its present level, the extra dirt being used to fill the swamps and marshes that formerly surrounded it on three sides. When we took up our abode in the city on the Maumee this colossal work of grading had just been commenced. Only a few of the principal streets in the upper town had been graded. There was a space of nearly a mile between the upper and the lower town. The house into which father moved us was on the hill, where only a few of the lots had been graded down. Some of the houses stood thirty or forty feet above the street level, and in some places two or three flights of stairs were necessary to reach the first floor of the houses.

The main street connected the upper with the lower town, and in some parts it had been cut down sixty to seventy feet. Notable among the structures which were left high and dry by the grading down process was the old National Hotel. It was necessary to climb two long flights of steps to get up to its door; and strangers usually shunned it because of the extra effort required to get to its hospitality. Even after having been brought in a carriage from the boat or the railway stations, travelers would turn away and go to some hostelry not quite so near the sky.

The house into which we moved had once been an aristocratic establishment; but it had been left so high up on the hillside that its wealthy owner had deserted it for a home more nearly on a level with the rest of humanity. This house was reached by two long stairways extending directly up from the street. There was a large grass plot at the rear as well as at the side of our new home. On the other side the earth had been cut away down to the street level and close up to the foundation line, causing the foundation to cave outward in one or two places. But the house had not been condemned and was still considered passably safe as long as half of it was on a solid foundation of stone and blue and red clay, which were the principal formations of the hilly portion of the town.

On account of this blue and red clay during the fall and winter the streets were almost impassable. The rains, frosts and snows loosened the clay and it crumbled and washed down on the sidewalks and out into the streets, making both so slippery and gummy that it was nearly impossible to get about in wet weather. It was a common experience to measure one's length in the soft mud; many a stranger thus made and left his impression on the town and the on-lookers. Arriving in town on a day when the streets were extra soft and slippery, satchel in hand, he might prefer to walk up the main street, to get a better view of the city than if he should ride in an omnibus or carriage.

Whenever a new arrival was seen thus making his way the loiterers followed at a safe distance, well knowing a good laugh remained in store for them when the stranger should come upon some over slippery spot. They would not remain long in suspense. The traveler would slip here and there, keeping his feet by vigilant agility; but, at last, when least expecting it, out his feet would go from under him, his luggage flying in any and all directions, his arms and legs spreading out in the soft mud, leaving a full silhouette where he had come down "like a brick house."

Truly he has found a bed to exactly fit his form, and he arises from it with a new coat and cheaply bought. Filled with disgust, he quits the city, having made up his mind that it is the most godforsaken place he has ever seen.

Mud in Streets Pulls off Shoes.

Frequently the school children got stuck in this Toledo mixture of blue and red clay. Sometimes it would be necessary for some adult passer-by to pull them out of their boots or shoes to extricate them, and occasionally footwear would be lost or abandoned where it had gone down. I often had my shoes pulled off in this mud, recovering them after, perhaps, an hour's hard work. Then they would appear the size of a peck measure, with their accumulation of parti-colored clay that clung "closer than a brother."

Soon after we settled in Toledo I resumed my old business of selling candy from house to house. I also added parched or popped corn to my vended stores. Father opened a confectionery and bakery on the main street; and our business prospects were good from the start. In the winter I attended school during the day and sold candy and popcorn in the evening, and on Saturdays. I had a regular route, and usually took in about a dollar and a half an evening. Two thirds of this was profit. I sometimes was out selling until one o'clock in the morning. I would seldom go home until I had disposed of all I had taken out.

I would go around among the stores until they closed for the night. The merchants and clerks were well acquainted with me, after a little while, and did not hesitate to buy my wares whenever they wanted anything in my line. I always kept myself scrupulously clean; and, although my clothing was not new, generally mother kept it well patched and I was always careful about brushing my trousers, coat and hat.

Unless it was raining or otherwise stormy, I generally went the full length of the town, which was not large then as now. I would manage to get around to the stores by nine o'clock, and in them at least half my candy and popcorn would be sold. If it chanced to be a stormy night, and the townspeople were sitting in groups around the comfortable stoves, I would sell more, sometimes selling out entirely.

Loiterers Fond of Playing Jokes.

These loiterers were very fond of playing jokes on each other; and, at my approach, somebody would suggest that they decide who should pay for the candy or popcorn by means of some game of chance. One of their favorite methods was to use a bar of lead bent at the ends so that the center would balance and whirl when laid on the table or counter. All who wished to take chances on the play selected kernels of corn and placed them in a circle. Then some person not a player would give the bent lead a whirl. After spinning for some moments, the lead would settle on or near some grain of corn in the circle. The owner of that kernel must pay for treating the others present.

Another method was called "Grab." The players would select grains of corn, place them in a row on the table or store counter and prepare to grab for them, each player striving to grab his own kernel first. The unfortunate player who was slow and grabbed last must pay for the treat. That was the general rule; but, sometimes, it was reversed—when it suited the purposes of the old hands at the game.

This "Grab" game, though childish and simple, afforded the farmers and others congregated in the stores in the long winter evenings much sport. This was especially true when it was decided to snare some "green one" in the game. This was done thus:

The kernels of corn being arranged in a row on the counter, with the players standing in line, arms and hands raised, ready to pounce down on the corn at the word of command, the leader would cry out:

"All ready—Grab!"

The new player, of course, being all attention and keenly alive, to prevent getting left to the last, would be sure to lose no time in clutching his grain hard and fast. Those initiated in what was "on tapis" would take much more deliberate action. As a consequence the "green one" would invariably be the very first to grab his corn. There would be no doubt about that fact. When the question arose, "Who was last?" the new player, in his innocence, would quickly aver:

"I was not last; I was first."

Then an argument would be started, which would grow to mock heat, as though it was very difficult to determine who really was last. After considerable bogus wrangling, somebody would gravely quote Scripture: "And the first shall be last and the last first," or something similar and to that effect.

Then the knowing ones would cry out: "That's it—the first shall be last. That's the only way to settle it."

Everybody but the new player would agree to this, of course; and the victim would feel compelled to yield to the general clamor. In the meantime the joke would dawn on his mind; and, amid general laughter, he would liberally treat.

He Never Forgot the Smith's Words.

On other occasions a pack of cards would be brought out and a game of euchre, old sledge or other game would be played to decide who should buy for all. Though I often watched these games with natural interest, I never learned them,—hardly the names of the cards. For the blacksmith's insulting language when I sold candy at Adrian still haunted my ears.

"You will be a drunkard and a loafer" was graven on the tablets of my brain, never to be forgotten, ever intensifying my resolution to die rather than become a gambler, drunkard and a shiftless fellow generally, as the brutal blacksmith had predicted. Many of my young associates, chewed and smoked tobacco, used profane language and indulged in other evil things, and they often laughed derisively at my shunning such habits.

But they little knew how clearly the hated blacksmith's vile words constantly rang in my ears, or they would have been more considerate of my feelings. The older I grew the more increased my hatred of the blacksmith and his prophesy. And the more I hated the blacksmith the more despicable appeared the evil things he had predicted for me. Thus what he had intended to be a rankling insult proved, in the future, to be a blessing and a safeguard against the temptations by which I was constantly surrounded.

A Silent Witness of "Skin" Games.

When the stores had closed for the night I went to the hotels and, it must be confessed, to the saloons to finish disposing of my goods. At the hotels the attendants sometimes showed me up to the private rooms of aristocratic gentlemen who had met together for an evening's amusement. Their amusement consisted, I am sorry to state, usually of gambling—not for mere pastime but for money, sometimes large stakes. In such parties there could be seen merchants, lawyers, doctors, and gentlemen of leisure. The latter, though very nice, apparently, standing high in social, political and business life, honored by the uninitiated for their supposed integrity and honesty, were in those games strictly for what they could get out of them. And they usually succeeded in "skinning" their unsophisticated fellow players.

What most astonished me was that these light-fingered gentry were not detected and drummed out of the community.

As a candy and popcorn seller, often looking on at those games for an entire evening, I was able to see many "off-color" tricks that escaped the eyes of the players who were thus made victims. But I was never suspected of seeing such things; and I considered it a point of honor never to carry tales to the outside world from places where I had been admitted on a confidential footing.

But I never forgot those dishonest men and their methods, their positions in society, their standing in the churches, their pretended virtues, and their actual lives of hypocrisy as revealed to me in my work as an humble candy vender.

Such scenes made me hate vice and dishonesty with more and more intensity.

Having visited the hotels with my candies and popcorn, I would next make the rounds of the saloons, the ball alleys and other places of amusement. In all those places I would always find trade good; but I left them to the last on account of their unpleasant associations. For in some of them I witnessed bald, unadorned scenes of drunkenness, gambling and rascality which I could never forget. In such places I saw many boys, some as young as myself, swearing, drinking, smoking, rolling ten pins, or punching balls on billiard tables. I sometimes was tempted to join in their less harmful sports; but I would quickly draw back, remembering the blacksmith's words, and fearing that, once having entered into such associations, I would never end till I had fulfilled his prophecy.

Prayers of Good Mother Save Him.

In moments of weakness I believe that I was saved from myself by the prayers of my mother; for her watchful solicitude followed me everywhere by night and by day, there is not a doubt, shielding and protecting me when temptations were almost too strong to be resisted.

Having gone my nightly rounds, sold out and bid the nocturnal world a good-night, I would start for home—often as late as twelve or one o'clock.

Before I began selling candy in Toledo we had moved to the lower town; and all my vending was done in the upper town. Therefore I usually had to walk a mile and a half or more to reach home; but my heart would be light and my pocket heavy, so I would move along rapidly and cheerfully.

Between the two towns there were only two or three widely scattered houses, and about half way there was a deep pond with an old church beside it. The boys often related hair-raising yarns about the ghost of a drowned man having been seen around that pond. The route which I traveled passed close to the edge of the pond; and on unusually dark and stormy nights my fears would try to get the best of me. But the good sense my mother had always taught me—not to be afraid of anything until I had *actually seen, heard* or *felt* it—helped to steady my nerves, and I always passed the somewhat uncanny place without incident worth telling.

When I would get home I would usually find all the family abed and sound asleep. Creeping into bed beside my brother, I would soon forget everything in such sleep as only a tired boy enjoys, seldom recalling the unpleasant scenes of the night even in my dreams.

Prime Sport in "Coffin Skiff."

When we had grown older brother and I built a skiff in which to fish in the Maumee river. "Grandmother Hicks," who kept an eating-house on the docks, told us that it looked like a coffin and declared that she had a premonition that we both would be drowned by it some day.

Brother and I had found the building of that skiff a very interesting as well as laborious undertaking. We first bought three long, wide boards. Marking one of them out for the bottom of the boat, we left one end square but cut the other end down to a point to be used for the bow. We then sawed a square piece of plank for the stem board and a piece of oak for the cut-water. Having fastened these to the bottom, we next placed one of our long boards on the side and nailed it there. It didn't want to come where we wanted it; but after considerable hammering of fingers, growling on our part and splitting on the part of the board we got it in place. Rejoicing over our success in nailing on that side, we turned the boat over and went through about the same trials in nailing on the other side. With lighter hearts, we next turned the skiff bottom side up and caulked it by driving old rope raveled into the seams. We then built a fire, melted some rosin and daubed the seams over with the sticky and waterproof substance.

Having completed our boat, we launched it and rowed or, rather, paddled down to Grandmother Hicks' place. The landing was good there and, it being a central point, it was a general rendezvous for small craft. As we rounded to, in all our pride as the possessors of a brand new water craft, Grandmother Hicks came out to take a look. It was then that she made the sinister prediction (which never came true). And she declared, furthermore, that her grandson, David, should never go on the river with us in that coffin-like skiff.

After we had teased and laughed at Grandmother Hicks for a while, we went ashore and bought some heavy cloth and proceeded to make a sail for the queer craft. Fitting up a mast, we fastened our sail to it and were prepared to voyage over the waters of the Maumee and even Lake Erie, we felt, without the irksome effort of rowing.

And we had many an exciting sail in that little boat. When the wind was blowing a good gale and the whitecaps were topping the rolling waves we delighted in going out in it. As we went scudding through the billows on the wide river, which really is an arm of the lake at Toledo, one moment our little craft would be buried in the trough of the waters, and the next, perhaps, we would be riding the white crest of a high wave, ready for another plunge into the foaming waters a few seconds later. We particularly liked to be out in a light rain or thick mist, with the wind blowing it hither and thither, while we lustily shouted out some seafaring song, throwing defiance into the very teeth of the warring elements. We were happiest when beating against the wind, with the windward gunwale lying just beneath the water, while it swept over the side, keeping one of us constantly bailing to hold our craft afloat. Then our spirits were in perfect unison with the storm.

In later years I often wondered how we escaped drowning. Well, perhaps, our mother's prayers saved us. I can attribute our salvation to nothing else. For we certainly tempted death on many occasions, though we did so without thought of our imminent danger of a watery grave.

Great Fishing in the Maumee River.

We had some prime sport as fishermen in the vicinity of Toledo. Our usual method was to take a line fifty or sixty feet long, attach a hook baited with calf's liver or other tempting morsel, stand on shore, swing the loaded hook several times around the head and hurl it far out into the stream. Sinking to the bottom with its leaden weight, it would lie there till some catfish or other variety came along and swallowed the bait. Then would ensue the tug of war as the catch would be hauled ashore. If the fish were large this would prove both a difficult and laborious undertaking. But, in the excitement, we never thought of the hard work.

Some of the fishermen would attach two or three hooks to a line. But even this was not enough for brother and myself. Being enterprising, brother sent to Detroit and got a stout, well tarred rope nearly half a mile in length and with it three hundred large hooks. We spent a week or two fastening the hooks on short pieces of strong cord and attaching them to the long line. When we were all ready we hunted a quiet and promising place on the river and stretched the line across. We had placed on the line sufficient sinkers to keep it on the bottom; and we laid it at night, to prevent other fishermen from knowing its location. For many of the boys, and even men thereabouts, were not above "removing" a fish from a line when the owner was not looking.

I shall always remember with interest the first night we laid our line. By the time we had stretched the long rope, carefully baited each hook, and examined everything several times we were tired out. And we were glad to hurry home and get to bed. But we lay down with many conflicting thoughts in our heads. Our hopes and our fears were about equally balanced. Time and again we asked each other: "Will we catch enough fish to pay for all our outlay and our hard work?"

We slept little, and were out of bed with the first streak of dawn. Hastening down to the river, we jumped into our "coffin-boat" and paddled rapidly to where we had stretched our line.

In examining the line we followed the common method of commencing at one end and raising it, hand over hand. I shall never forget my sensations when we first caught hold of the rope and began to haul it up. Shades of Izaak Walton! Such a tremendous pulling and jerking and contrary hauling! It was like a tug of war between a score or more of lusty fellows on a side, with every fellow pulling in a different direction. As we boys agreed among ourselves, about half the fish in the Maumee seemed to have come to the conclusion to remove our line from across the river; and they had attempted it by hooking on and pulling, each his own way. But they had failed to remove the obstruction; and we removed them.

First Catch Is a 25-Pounder.

The first prize of our new enterprise was a twenty-five-pounder. And we had a time getting him into the boat, even after we had got the gaff-hook into his gills. And, after we had secured him, the jerking had not in the least abated. In truth, the farther we proceeded along the line, gathering in the fine gamy fellows, the more interesting the sport became. And it kept up till we had raised the last yard of line on the farther side of the stream.

When we took stock of our catch we found we had forty-two as fine fish as ever swam the Maumee, some of them weighing as much as thirty pounds, and the smallest not under ten pounds. Our "coffin-boat" was so laden that we began to fear Grandmother Hicks' prediction would come true, particularly since our cargo was of the most unsteady kind, constantly shifting from side to side and flopping about.

But we reached shore in safety, and found ready sale for our entire catch at prices ranging from eighteen to seventy-five cents a fish—according to size and quality.

Thus encouraged, we kept at it, night and morning, soon paying for our outfit. And then we began to accumulate a net gain of many dollars—I do not just recall how much. Seeing our large sales of fish daily, it was not long before the other fishermen began to "smell a rat," and they watched our movements, to discover the source of our success. Then we were compelled to be extra cautious in every step we took. Instead of waiting for morning to gather in our fish, we would go out at about midnight, strip the line, re-bait it, and, rowing ashore, roll up in our blankets and sleep till daybreak.

But that precaution did not avail us very long. The jealous rascals watched us night and day until they caught us in the act of removing the fish from our line. After that we, in turn, were compelled to watch them to prevent their robbing us. To do this we were obliged to be on the river or on shore near by all night long many a night.

After a time we associated with ourselves a lusty Englishman and secured a large and strong boat, capable of carrying a dozen persons, if necessary. At nightfall we would place in this boat a quantity of shavings and firewood as well as blankets and provisions and row across the river. Landing, we would camp in the brush, one of us keeping on the lookout for marauders all night long, each taking his turn while the others slept.

One beautiful moonlit night, as we were on watch in this manner, the Englishman, who was acting as sentinel, awoke brother and me, in the same breath warning us to lie perfectly still. But we could not resist the temptation to look out over the river, for we at once knew he had discovered the enemy.

The waters were unusually smooth and silent. The full moon shone down on the shimmering stream and mirrored her face in its bosom. As for ages, the stars silently looked out from their windows in the heavens. Some distance away the city, wrapt in slumber, showed the dark forms of its taller structures limned against the far away sky. The night was such that, once seen and felt, it would never be forgotten, its ineffable influence lingering like a soft halo in memory till the end. The wonders of the night's beauty was my first impression; and, for the moment, I forgot all else in contemplation.

Skirmish With Line Robbers.

But we saw something beside. There was a pirate craft out there, on the far side of the river, creeping slowly, noiselessly out from the shadows of the overhanging trees. It lay so low in the water we could not determine its size or how many persons it carried.

Silently, we slipped down the river bank and into our boat, where we sat, almost breathless, paddles in hand, ready to sally forth, so soon as the party approaching should prove to be marauders. We had not long to wait. As the boat swiftly emerged into the open river we saw it was a large, flat-bottomed scow with six men aboard, four of whom were rowing. They proceeded directly to our line, as we had expected, and began raising it. With a shout of warning to them, we dipped our paddles and rapidly made toward them. But they did not flee, as we had anticipated, having been caught in the very act of piracy. They promptly showed fight—as well they might, there being six of them, twice our number.

Instead of rowing away in the opposite direction, they started for us, filling the night with "emphatic observations" and expletives that cannot be printed in a respectable book. We were not frightened, but we at once conceived the idea of having some good sport at their expense. We knew we could far outrow them. So we quickly turned tail and they commenced a stern chase of us. We started upstream, leisurely at first; but as they bent to their oars, hoping to soon overtake us, we gradually increased our speed. We worked three paddles, Indian fashion, and, when necessary, could shoot through the water "like a greased eel." When we would draw away from them we would ease up, permitting them to almost catch us, when we would again open space between our boat and its clumsier pursuer.

Thus we proceeded, far up the river, they abusive and swearing, declaring they would drown us if they ever caught us; and we laughing back in derision at their frantic efforts to overtake us. We led them a merry chase till daylight, when we bent to our paddles and quickly left them out of sight.

The pirates hopelessly lost for the night (or, rather, day), we went to our line, stripped off the good catch and went home, much elated over our first skirmish with the enemy.

Toward the middle of June of that year the fish became scarce, not caring to feed on our bait, some varieties spawning, and others, I suppose, having given up the idea of removing the obstructing line from their swimming ground. Our catch became smaller and smaller, as the summer months advanced. And we were having no end of trouble with our long line. Brush floated against and hung on it, giving us much work to keep it clear. At last a floating tree or large log went against it and carried it away entirely. We hunted and dragged the river bottom for several days; but, finally, gave up the quest, feeling sure our line was gone "for good."

After awhile we had other things to divert us, and forgot the loss of our fishing tackle. Brother bought a sloop, called the Mayflower. It was rigged with a large square sail and a jib sail and was twenty-five feet long. We had many interesting experiences in the Mayflower.

Expedition in the Mayflower.

Several miles east of the mouth of the Maumee, where it flows into Lake Erie, there was a point of land extending two miles into the lake and known as Cedar Point. This cape was a hunter's paradise and was famous at that time for its numbers of wild geese and ducks in the autumn and the early spring. Late in November, after the loss of our fishing tackle, a party of seven of us sailed in the Mayflower to Cedar Point on a hunting excursion. We started in the evening and did not arrive at the mouth of the Maumee and enter the lake until dark. The night was moonless and cloudy. But we boldly sailed eastward for the cape where we were to begin our hunt on the morrow. We had gone only a short distance when the wind failed us. Then we slowly, very slowly, drifted toward our destination with the aid of an occasional and fitful gust.

We could see the heavy shadows of the forest which lined the shores of the lake, and, dim and shadowy, loomed Cedar Point far on the eastern horizon. Gradually, we crept nearer and nearer, the time dragging into what seemed to us many hours, until, at last, we thought our craft so near the Point we feared she might strike on the beach. Making a sounding, we found the depth of water to be less than a fathom. My brother, letting himself over the side into the water, sinking to his armpits, began towing the sloop. Another hour or more was thus consumed before we came into shoal water. Here we anchored and launched our light skiff. Two of our party jumped in and rowed toward shore. Soon we heard their glad shouts that they were on the beach.

We were glad because a soaking drizzle had been falling on us for more than an hour; and we were anxious to get ashore and make a shelter of some kind—which we could not have in the small sail boat.

By plying the skiff rapidly back and forth, soon we were safe on land with guns, ammunition, provisions, and camp equipment. The next move was to find a convenient and safe place to camp. In the darkness and the rain and the tall weeds "up to our ears," we could only feel our way about. Upon what part of the Point we had landed we knew no more than any shipwrecked sailor on an unknown coast. It was decided that a scouting party should penetrate the tall weeds and grass and attempt to locate a good place for a camp in the woods beyond, the heavy timber being some distance back from the shore line.

Soon the scouts returned and reported a fine spot, where an old tree had fallen, its top resting on the ground and its trunk having broken off some ten feet above the earth and hung there, while wild vines had thickly grown all over and about it, making a natural shelter from the drizzling rain. With a rush we gathered up our luggage and started for the place.

Arriving, the next question to decide was the building of a fire. Everybody began searching around, in the darkness, for material to start a blaze. But everything touched was wet; and we were about despairing of having a camp-fire that night. At this gloomy juncture, one of our party discovered that the tree under whose trunk we had taken shelter was hollow on the under side and dry as tinder. Ramming a loose load of powder into one of the guns, one of us fired it into the hollow—and, presto! we soon had a most cheerful blaze. With care we fed the fire with whatever we could get that would burn; and we were no longer cold that night.

Natural Canopy at "Cucumber Camp."

By the cheering firelight we looked about us and discovered that we were sheltered from the rain by a dense canopy of wild cucumber vines hanging on the trunk of the broken tree and the bushes near about. Those vines, with their thickly matted and broad protecting leaves were hanging thick and close on all sides of our natural tent, excepting an opening toward the water, through which we had entered. How comfortable and cozy we felt can only be imagined; for it was one of the wildest November storms outside that night I ever knew on the coast of Lake Erie, famous for its sudden storms.

While we prepared our supper and sat beside the bright fire under the shelter of those wild cucumber vines we listened to the rain, now almost a deluge, as it was swept hither and thither by the wild wind which roared and whistled through the tall tree tops a hundred feet above, and we were as safe and dry as though in a king's palace. It hardly seems credible; but it is true.

The older members of the party, after supper, amused us by relating hunting experiences, adventures with Indians, and fights with bears and panthers until we all became too sleepy to listen further. Then we spread our thick, heavy blankets, ensconced ourselves comfortably, with our feet to the fire, and soon the greater part of the party were fast asleep.

But, as for myself, though tired as the rest, I slept little. My mind was too fully alive to the exhilarating novelty of the situation—for it was my first experience of that particular nature. Furthermore, I was fearful that something in the way of an accident might happen—the tree burn off where it lay on the stump and fall on us, or something of that sort. Every few minutes I could hear the wild geese flying overhead, the leaders of the flocks uttering those peculiarly plaintive and far away sounds known as the "honk." And I could hear the swish of the tall grass and weeds around our camp as they bent before the blast in waves like the billows of ocean.

While I lay there, keenly alert to every sound without, my eyes wide open, staring at the bright camp-fire, my attention was fixed by a slight rustling of the grass near the entrance to our vine-tent, and immediately there appeared in our doorway the head and face of a man who peered in upon us as if bent on mischief if he dared.

We had with us a large Newfoundland dog; and the faithful animal, as alert as I, sprang up at the approach of the stranger, growled and showed his fangs. The growling of the dog awoke our whole party, and everybody started to his feet. The stranger carried a gun and proved to be a French Canadian who said he was on a hunting expedition, like ourselves. He said he had been down on the beach to get a shot at the geese at night. After some further conversation, the stranger went away; and we all settled down, I soon joining the others in the sweetest sleep of our lives.

Dog Kills Queer Looking Animal.

Next morning we were awakened by a great growling and scuffling just outside the camp. We could make out that our dog was in the "scrimmage," and he seemed to be fighting some wild animal. While we lay and intently listened, thinking of panthers and bears, the struggle gradually grew less violent and finally ceased altogether. Very cautiously we parted the thick vines and peered out to where the noise had proceeded from.

Our brave old Newfoundland was standing above his fallen foe, licking his jaws and, at our approach, wagged his tail in triumph. We could not determine what the animal was, but it was gray and looked to me about as large as the Newfoundland. It lay on the ground, stretched out, stiff and still, as though dead. We speculated at some length as to what it could be, some of the more inexperienced in the party advancing the supposition that it was a gray wolf.

But one of our party who had been hunting oftener than some of us younger boys examined the animal closely and declared it to be an—opossum.

"And he is not dead, either," added the experienced one.

"Not dead?" several of us cried together. "Well, we guess he is. If he ever had any life in him, it ought to be shaken out of him by this time, after all that noise we heard."

"Well," answered the experienced one, "see him curl his tail around my finger. Look—I can lift him by it."

Sure enough, the animal could be lifted by his curled tail, which certainly should have been limp and lifeless had he really been dead. Some of the boys suggested that he was like a snake, and "his tail would live till sundown."

"No, he's a 'possum," reiterated the knowing hunter. "And he's only playing possum. Get a live coal and touch his nose."

One of the boys brought a brand from the campfire and applied it.

"See there, he feels it," triumphantly said the knowing one. "Yes he does, and he's not dead. He's a 'possum, sure."

We debated what to do with him. We finally decided to try a load of shot on him. He was laid on a log, and the gun was fired at close range. The charge entered his head. Then he squirmed and kicked about in a lively manner—which proved conclusively that he had not been dead, though he soon would be after receiving that load of shot.

The opossum disposed of, we turned our attention to the real business planned for the day—duck and geese shooting. The wild fowls could be seen flying in every direction. The day had broken drearily, with low-hung, mist-laden clouds covering the sky, and a cold, gusty wind was blowing from the north, bringing the first icy suggestions of winter. All the party except myself prepared to leave camp to gun for geese along the eastern shore of the Point. I was left in charge of the camp.

Everything was interesting enough while the hunters were bustling about and getting away from camp; but after all had gone I felt very lonely indeed. I was completely shut in from the prospect by the tall weeds and grass, being able to see only the upper part of the tall timber, the solitude of which added to the deserted sensation from which I suffered. Soon a heavy drizzle again set in, and I was glad to retreat to the shelter of the "Wild Cucumber Camp," as we had christened it.

Sylvan Tent a Wondrous Bower.

I amused myself by contemplating the beauties and wonders of this sylvan tent. Only by daylight was it possible to fully appreciate the wonderful construction and wild attractiveness of the retreat. The festooning vines covered the tops of several of the highest trees and to the very ground the growth was almost impenetrably thick. The shelter thus formed hung umbrella-like over the fallen tree beneath which we had camped, and the ground for several yards square there was covered with a mass of grasses and mosses a foot in depth, all of which was as dry as though no rain had fallen. A more ideal camping place in the woods could not be imagined, and I have never since seen anything that approached it in coziness and beauty.

It was one of those woodland retreats where the fairies meet to hold their annual council and prepare to greet the Goddess of Spring, when she again approaches, with green grasses, leaves, buds and flowers to deck earth's bosom with vernal loveliness. It was one of Nature's beautiful forest homes, unsullied by sin and vice and enlivened by the songs of the birds and the barking of the agile squirrel.

In later years my thoughts have often turned back to that "Wild Cucumber Camp," while I have wondered if Adam and Eve had a more beautiful house in the Garden of Eden, and if many a dusky Indian maiden had not been wooed and won by her lover brave while hidden there long before the paleface had polluted the crystalline waters of the lake and swept aside Nature's decoration on the land. Where the sylvan bower has been turned into the sordid wheat field and the song of the Indian girl calling to her sweetheart has been replaced by the whir and rattle of the merciless reaper, which severs and levels all heads coming in the way of its relentless blade.

Some such thoughts were passing through my then untutored mind that day while I lay there in camp alone, with only my imaginings to keep me company. While in this reverie I reclined I was suddenly aroused by the growling of our faithful dog, which had stolen back to camp and lain down near the entrance without my knowledge.

Coon Walks on Top of Weeds.

I quickly got to my feet and looked out. There, *moving along the tops of the weeds,* I saw what looked like a coon,—the queerest sight that ever met the eyes of a boy. I was not easily frightened, and I kept staring at the queer object, while it came toward our camp. Through the heavy mist and the semi-darkness I soon made out the *lineaments* of a *human face* directly underneath the moving coon. And in a few minutes more a tall half-breed, carrying a gun and other hunting equipments, stalked up to the entrance of the camp.

Then I saw that the coon had resolved itself into a cap, made from the whole hide of the animal, the head, eyes, teeth, tail and all having been retained. The coon had been split open in the belly and all the bones, entrails, flesh, et cetera, had been removed, when what remained had been carefully dried, leaving the opening in the belly for the wearer's head. The dried result looked as natural as a live coon.

The half-breed looked the camp over for a few minutes, said but little, and went away, without explaining the object of his visit. Probably he had seen our party hunting along the beach and, inferring that our camp had been left alone temporarily, had come hither with the intention of stealing what would seem desirable and easy to carry away.

We had camped at about the middle of the Point. It was about a mile to the lakeward end and about the same distance to the mainland. After awhile, the rain having temporarily ceased, I went down to the shore to throw stones at the blackbirds, which were flying in thousands. The Mayflower was anchored about a quarter of a mile off shore, and I could see it dancing about on the rough sea. I wished myself aboard. Once there, I felt, I would be safe from opossums, half-breeds and all other disagreeable things. I was suspicious of the tall grass and weeds—for there was no telling what might be concealed therein. Beneath their waving folds might lurk and skulk bears, panthers, snakes, and other vicious and venomous animals and reptiles.

After a time I got tired stoning the birds, and went back to camp and lay down before the comfortable fire. Soon another storm threatened. The clouds began gathering, black and angry. The wind increased in velocity; and the roar of the breakers on the shore rose louder and louder. With the unrest of the elements my own spirits grew more restless; and I quit the camp again and began a survey of the Point. In the distance I could see a large wooden structure. I started toward it to make a closer examination, but I was nearly drowned rain dripping from vines and trees before I reached it. I found the object to be a tall tower made by using four trees seventy-five feet high and nailing scantling and boards crosswise from the ground upward; but, in the place of the nails that we now would employ, *wooden pegs* had been used.

On first sight I thought it to be some sort of rude monument or burial scaffold erected by the Indians. But, after I had climbed to the top and looked far out over the lake and the surrounding land, I concluded that it had been built for use as a surveyor's base line in surveying Lake Erie, or something of that sort.

In the remote distance I could descry, through the mists, the "Twin Sisters," two islands some forty miles from Toledo, near where Commodore Perry defeated the British fleet in the Battle of Lake Erie in the War of 1812. Those islands were favorite steamer pleasure resorts, excursionists going thither in the morning, spending three or four delightful hours, and returning to the city at night.

To the west of me I could see another point of land extending out into the bay—a twin brother to Cedar Point. The lighthouse stood about half way between. A sand bar circled far out into the lake, shutting off entrance to the river's mouth except by three channels. One of these channels was near Cedar Point. I could easily trace the sand bar by the light color of the water above it, while the blue water of the deep lake appeared beyond. Away up on the east side of Cedar Point deep creeks penetrated and nearly cut it off from the mainland. On the lake shore were the scattered fishermen's reels, for drying nets, now deserted, the owners having no further use for them till winter had passed and spring had come again. Farther up on the beach their cabins stood, their doorsteps almost washed now by the long white-crested swells as they rolled inland. Smoke was issuing from the chimneys of some of them, where hunters had taken temporary possession. Logs, lighter driftwood and wreckage lined the beach here and there.

After spending an hour, perhaps, in enjoyment of this interesting prospect, I came down from my lookout and went back to camp. All our party had returned, unsuccessful, reporting the wind too high for either goose or duck shooting.

Jib Sail Comes Loose on Sloop.

While preparing dinner somebody discovered that the jib sail on the Mayflower had flapped loose in the wind, threatening its destruction or loss unless quickly secured again. This would mean great difficulty in sailing homeward. We had no boat handy with which to get out to the sloop, our skiff having been taken far up the beach for use in crossing the creeks. But my brother, always ready to undertake any desperate piece of business, declared he would get out to the sloop somehow and tie up that sail, or drown in the attempt. Removing his boots and trousers, he went into the lake and waded out toward the sloop, not knowing what moment he would encounter deep water. But he reached the Mayflower in safety, deftly secured all the rigging so that the wind could not again loosen it, and returned to camp without mishap. Later we got our skiff and attached it to the stern of the sloop.

When the time came to start homeward the question arose: Shall we go direct for the mouth of the Maumee or take a longer sail out on the lake? We decided to take the longer course, though some of us had misgivings. Hoisting both main and jib, and raising anchor, we sped away before the wind for the channel leading through the bar out into the deep waters of the lake.

Inside the bar the water was calm by comparison; but no sooner had we got outside than we were in trouble. The wind had increased to a gale, and the white-capped waves rolled high around, above and over us.

We had often sailed on the river and the bay in a storm, but had experienced nothing like that before. We were bounding along on the rough waters like a cockle shell.

Every succeeding swell raced up over the surrounding waters. Soon we could see nothing but the lighthouse, rising like a whited sepulchre against the dark sky or a monument to the wrecks of many a steamer which had gone down in those very waters.

Our skiff, tied on behind, rose and was shot forward by every swell, striking the Mayflower's stern a sharp blow, threatening to knock a hole in the hull.

What, with the skiff hammering us, the waters washing over us, drenching us to the skin, and the wind whistling above, many of us were getting sadly frightened.

My daredevil brother, to reinspire us with hope, declared he would stop that skiff from pounding. He at once leaped from the sloop into the smaller boat, cut loose and began rowing in the rough sea some distance astern.

Up to this time our attention had been so absorbed by other things that we had not observed that we were making rapid leeway directly upon the bar. When we discovered our danger my brother came aboard, assumed direction of the sloop and decided to run bow on to the bar, trusting to chance to get over, once we had struck. He hoped the heavy billows would lift us over or, at least, assist.

Wreck on Bar of Mayflower.

We struck at full headway, the concussion throwing us from our seats. The next instant a huge wave rolled over us, filling the vessel. Brother at once sprang over the bow, calling to the rest of us to follow and try to lift the sloop over with the next big wave.

Before we could get in position to lift or push two or three large billows struck us, swinging the sloop around on her side and again filling her with water. A feeling of hopelessness began to creep over the less experienced members of our party; but not so with brother.

While we stood for a moment, irresolute, I seized the opportunity to look about us. Fully a mile to the south lay Cedar Point. There was no hope of regaining it. The deep channel, with big billows rolling through it, intervened. Far away to the west the lighthouse loomed up; but a long white row of

WRECK OF THE SLOOP MAYFLOWER.

foam marked the sand bar leading toward it until another deep channel cut us off from escape that way, even if we could follow the bar that far.

Would not the lighthouse keeper discover our plight and come around inside the bar and take us off? I asked myself. But reflection convinced me that we could not wait long enough for him to make the trial, even if he should attempt it. Each successive wave that broke over us drenched us with icy cold water and covered us with sand. We could not stand that long.

We looked into each other's faces, silently, hoping some way out would be suggested. But every face was blank, and every tongue remained silent.

How long we thus hopelessly clung about our foundered sloop I could not reckon; but my brother awoke us from our inactivity with a summons for one more effort to help the boat over the bar. He had thrown overboard the ballast while we stood still.

We all placed our shoulders under the hull in one more desperate attempt to get our craft afloat inside the bar. As we pushed and strained the angry waters seemed to redouble their fury, fearing to be cheated of their prey, as I imagined. But the heavy inrolling seas aided us, and at last the sloop plunged off the sand ridge into deep water.

Some of us sprang aboard as she got off; and the anchor was at once heaved to hold her while the ballast should be recovered. Then we began to take stock of damage. We found that a six-inch hole had been knocked in the bottom. We quickly mended this by ramming a blanket tightly into it. Then we hauled up the anchor, spread the sails and pointed our sloop's nose for the mouth of the Maumee, ten miles away.

Rescue of Two Little Children.

The water being smoother inside the bar and there being no lack of wind, we soon had covered five or six miles. At this point our attention was attracted by a skiff drifting from towards the mouth of the river and out into the body of the lake. The skiff was a mile or two out of our course; but some of the boys thought they could see two children in it, and we at once hauled away and sailed for them.

As we tacked into the teeth of the wind, with light ballast (part of it not having been recovered), our lee rail was dangerously near the water line. But all of our spare sailors sat on the windward rail, while the Captain kept his eye on the lee, ready to clew sail when he should find the water running aboard us. We dared not take chances at doing much bailing in that storm, short of ballast.

The skiff with its two helpless children was making rapid headway through the channel which crossed the bar at that point; and our hearts stood still as we observed this, for we knew we could never follow them into the open lake, in our present crippled condition. Beside night was approaching; and, even if we should succeed in rescuing them outside the bar, we felt that we would never be able to make the mouth of the river, returning in the darkness.

But we were determined to do all possible to reach those children, whom we could now plainly see to be a little boy and a girl somewhat older. Both, however, were mere babes. Our only thought being to save some poor mother's helpless darlings, we bravely swept on our course toward them. At last we were in hailing distance.

Calling to them to hold on to the sides of the skiff tightly, with a cheer from every throat on the Mayflower we swept alongside the frail boat.

With the agility of an experienced sailor, one of our number leaped into the skiff, and in a pair of minutes the babies were safe on board our vessel.

Leaving the skiff to continue out to sea, we quickly swung about—just in time to avoid running head on to the bar again. With consummate skill, the Captain made two short tacks—and we were bowling homeward.

Safely headed for home, we turned attention to the children. The little boy was but three years old, and his sister was five, they told us. The little girl, who gave her name as Mary, said her brother's name was Johnny and that her father's name was "papa." That was all we could get out of them relative to their family history. But the little girl added that her papa lived near the river, that she and her brother had got into papa's boat to take a ride, and that the boat had started down the river and she was afraid she would never see her papa and mamma any more.

And then she began to cry softly. We assured her we would find her papa shortly and that she must not cry. Both the children were very cold, but we wrapped them in blankets, and they soon snuggled down in our arms and went to sleep.

While we were coming about for home the night shut down on us; but, since we knew the wind was on our beam, we could steer by the flapping of the jibsail. While we lay in a direct course the jib pulled steadily, but if we got out of the course the jib flapped in the side wind. It was a queer compass, but it answered our purpose in the absence of something better.

Though the howling wind followed us like an avenging wraith, the good Mayflower never acted better, seeming to know of her precious cargo—the rescued children. All the fiends of the air and the waters beneath seemed to say:

"We will get you yet."

But our brave Captain, in his crippled little craft, defied them all; and we were brought safely to the dock at Toledo about one o'clock in the morning.

With our still sleeping babes we got ashore and started up town. But we were soon stopped by an unusual commotion among the townspeople. In response to our inquiries we were told that the two children of Lawyer Hill had disappeared the evening before and that everybody had been searching for them all night. We learned that the broken-hearted parents had just gone home, in despair, believing that their children had fallen in the river and been drowned.

At this juncture we produced the sleeping babes. And such a mighty shout as then rose never echoed along the shores of the old Maumee before or after. The good news was speedily carried to the Hill home, a beautiful residence two miles below Toledo.

The nearly frantic parents leaped into a carriage and soon the mad gallop of horses announced their approach. We placed the babes in the carriage, where the arms of their mother encircled them, while she became almost hysterical with joy. The tension of the long hours of fruitless search had proven too strong for her, and there was great danger of her collapsing for a time. But she soon recovered, and then we told her the story of the rescue, while she took turns thanking us and praising our bravery and caressing her darlings.

That mother's happiness repaid us a thousand fold for all our hazard and hard work. And those who believe in divine leading can plainly see it in our adventures of the afternoon and the final rescue of those children.

In explanation of the accident, Lawyer Hill said that he always kept his boat locked at its mooring place; but that some marauder, evidently, had broken the lock, used the boat, returned it to its place and simply pushed it partly up on the shore, not taking the precaution to tie it. Consequently, when the children had got into it, a few rocking motions had sent it adrift. But a kind Providence had placed our good sloop Mayflower in its path, and he would ever be thankful for the timely deliverance of his dear little boy and girl.

The city of Toledo was notorious for brawls on the streets, especially at night. The Wabash and Indiana canals terminated there, and numbers of lake vessels were coming into port every day, bringing their crews to mingle with the canal men and other workers on the water constantly on the streets. The lake sailors and the canal workers cordially hated each other, and their meetings in the saloons and other resorts terminated in many fights, which sometimes assumed the proportions of riots. On occasions as many as a hundred men would be involved in such brawls. The sailors were the more daring and hardier; and the battles generally ended in the routing of the canal men by their hardier foes.

Toledo's Brave City Marshal.

But we had a city marshal who was equal to the emergency when he deemed it advisable to interfere. He did not "wear gloves" nor "mince matters" when he went out to quell a disturbance. He would at once advance into the heart of the trouble, and his first argument would be a knockdown. Then the chief disturbers would be loaded on carts and taken to jail.

One incident particularly impressed my boyish memory. I was vending candy in the vicinity of a saloon when I heard loud and angry words some distance down the street. It was at night and the moon shone brightly. With the curiosity natural to a boy, I ran toward the noise and arrived just in time to see a man fall backward and strike his head against a stone step as if dead. There he lay, limp and senseless, while a crowd gathered from every direction. A few feet away another man lay on the ground. He also had been knocked down.

And our valient city marshal had done the hitting in both cases. In explanation, the marshal said they had been fighting, he had ordered them to desist, they had not obeyed, and he himself had immediately taken a hand. Neither of the men was seriously hurt, and both were carried off to the holdover.

The marshal himself kept a saloon, but he always conducted it in an orderly manner. The habitues at his place knew better than to start a row on his premises. The marshal gradually increased his business until he was conducting a hotel also. And he prospered in both undertakings. His places being noted for their good accommodations and orderliness, the citizens all over town took pleasure in recommending them, and there was never any lack of patronage.

But no unruly or undesirable patrons were permitted in either place, if the proprietor knew their charcater. I recall two cases in which objectionable persons were shown to the street without preliminary and with less courtesy.

One night a group of young dandies, bent on a general spree at the expense of their rich fathers, went into the marshal's saloon, hooting and yelling in an already half-drunken condition. The marshal himself was absent at the moment, and the barkeeper supplied the whisky ordered by one of the party. The liquor having been drunk, one of the more boisterous snatched up two fine glasses and brought them together with a crash, smashing them into bits.

Just at this juncture the marshal entered the saloon. One glance was enough for him. Grabbing the glass-smasher by the back of the neck and the trousers, he bodily threw him into the street, much to the detriment of his super-extra doeskin suit and his immaculate shirt front. The marshal did not stop to inquire if the fellow was worth ten dollars or ten thousand. In truth, he would take greater pleasure in kicking a rich man than a poor one—if he deserved it.

The other incident occurred one night at a dance in the hotel. A number of young men and women were tripping the "light fantastic toe" to the sound of the fiddle and bow, when a reckless young Frenchman, dressed in the height of fashion but drunk to the point of idiotic hilarity, sprang wildly on to the floor, and, without a partner, attempted to cut a number of queer figures all out of time to the music. His gyrations interfered with the dancers and he roughly jostled several of the young women.

The marshal was on the scene, however, and he lost no time in reaching for that frolicsome Canadian. And the fellow in a jiffy found himself on the street, smarting from a stinging kick which the doughty marshal had given before sending him about his drunken business elsewhere.

Though our marshal was orderly about his saloon and hotel, kept everybody else in order and watched the welfare of the town vigilantly, he was not above indulging in an occasional "spree" himself. But whenever he felt the inclination for extra relaxation he would go away to some other town to indulge the impulse.

This was well known by the citizens of Toledo; and, in fact, he had been selected for the duties of marshal with that knowledge; for a man who was not above mixing with the rougher element on their own plane was better adapted to the difficult work of controlling them than a more moral citizen would have proven.

It was while on one of his "periodicals" in a neighboring town that the marshal got into the trouble which ended his official career in Toledo. He and several friends one cool night in March went out to a country town to attend a dance given in a hall with a saloon attachment. On the way out the party had plenty to drink, and after their arrival the proprietor of the hall and saloon attended to it that they got all they were willing to pay for. Since the chief object in giving such public dances was to sell drink, the marshal and his friends enjoyed full opportunity to indulge their abnormal appetites. Therefore, just in proportion as the proprietor's whiskey barrel went down their spirits went up. Their boisterousness increased with each fresh libation of whiskey as the night wore.

Their noise and general hilarity rose to such a pitch that the proprietor finally forbade them to enter the ballroom. Though he had thrown many a drunken man out of a dance hall, the marshal was highly insulted when the rule was applied to himself, and he at once maneuvered to start a fight. He was quickly accommodated by others almost as drunk as himself. His friends joined the fray, and blows fell thick and fast.

The young Frenchman whom the marshal had thrown out of his own dance hall was present and he entered the battle to wipe out the old score. And the sturdy farmers of the neighborhood, many of whom were in the hall, were not of the "white feather" sort.

The belligerent marshal and his party had met their equals. The battle was waged more and more furiously. The undaunted marshal stood against his foes with all the manliness in him, but he was outnumbered.

At last he had met his Waterloo.

Kills a Man in a Drunken Brawl.

Disputing every inch, he and his party were slowly driven back. Finally they were forced to the outer door. Here he made a last desperate stand; but the foe, with shouts of triumph, rushed upon him and he was swept out upon the street.

Maddened by defeat, the marshal drew a long knife and wildly slashed right and left. Several of the enemy were cut and one man was stabbed to death. Somewhat sobered by the battle and its tragic termination, the marshal and his party fled.

On the following day the county sheriff and four deputies came to Toledo to arrest the marshal and his accomplices. But the marshal was not there, and nobody would volunteer any information as to his whereabouts. His saloon, the hotel and all the outhouses were searched; but the bird had flown. It was whispered that the hunted murderer had come home and had been in hiding, but that he had slipped out after the arrival of the sheriff, gone down to the river and crept aboard the steamer Columbus, lying at the dock.

The steamer was in the river near the hotel, where it had been laid up for the winter. The engineer was living on board, taking care of it, until navigation should open. He solemnly averred that no person had that day or any day recently, to his knowledge, come aboard the Columbus and invited the officers to search it, if they doubted his word. The sheriff carefully went all over the boat except down into the engine and boiler rooms, which were very dark—and it was suggested that he had a lurking fear that he might meet the marshal down there, which everybody knew would not have proven healthful for him.

The marshal had not paid cash down for the furnishings of his hotel and still owed some on everything in it. As a consequence a rather novel scene was enacted around the hotel the day the sheriff came. Creditors flocked from all quarters and, sans ceremony or legal process, began stripping the premises of everything in sight. For some hours there was a constant procession of drays, vans and wagons going and coming, some empty, others laden with furniture, dishes, carpets, bedding, provisions, anything and everything to be found in a hostelry of that day and locality. The hotel was stripped of everything, the stables were stripped of horses, carriages, harness and feed, all the out-houses were entered and rifled of their contents.

All day the officers searched for the fugitive. The river was still frozen over, but the ice was expected to break up any day. The day was dark and gloomy, a thick fog and mist hanging above the icefields. Not finding the marshal on the boat, the sheriff and some of his men, equipped with long poles, to prevent going through the ice, should it break under them, spent several hours on the river, hunting and watching to prevent the fugitive fleeing across to the opposite shore.

A Boy Rescues Drowning Men.

Night was descending when a shout was heard down the river. Crowds rushed in that direction, arriving just in time to catch a glimpse of a figure disappearing in the mists toward the opposite shore. Several of the more adventurous, hoping to claim the reward offered by the sheriff that day, pursued, shouting wildly to the fleeing man. Having gone but a short distance, the foremost of the pursuers went through the rotten ice, and that ended the chase, his companions turning their attention to his rescue. In this attempt two others went down into the icy waters of he Maumee. The remainder of the party stopped just in time to save themselves, and whirled toward the shore, compelled to leave the drowning men to their fate.

The current of the Maumee ran swift and strong.

Farther up the river, where the ice had begun to break, could be heard an ominous crunching and grinding.

Through the mists and fog, about two hundred feet out in the river, could dimly be seen three figures bobbing up and down in the angry waters.

Unaided and helpless those men must soon be swept under the ice not far below and perish miserably.

The large crowd on shore shouted to the men still on the ice to turn about and lend a hand to their late companions in the chase. Many became enraged at their apparent cold-blooded deser-

BRAVE BOY RESCUING DROWNING MEN.

tion of the doomed men and hurled epithets of the most insulting nature at them. But they calmly invited those on shore to come out and rescue the men if they were so much interested and were as brave as they talked.

But not a man on shore moved. The moments were fleeting. Soon it would be too late to help.

Somebody ran to the steamer Columbus and got a long rope. One end was secured on shore and the rope was tossed out on the ice.

A volunteer was called for to carry the rope out and throw it to the men in the water.

Still nobody offered. Strong men stood there like cowards and urged their neighbors to go.

To the more sympathetic the suspense became heart-breaking. Many of the women and children were crying as if their own husbands and fathers were among the apparently doomed men.

The first man to fall into the water had ceased to call for help by this time. His voice had been growing weaker and his struggles less violent for some minutes.

The other two men were weakening also, it was plain to be seen while watching their efforts with our tense gaze from shore.

The crunching of the ice up the river was growing more ominous. Certain death awaited the strugglers and was not far away.

Would they be permitted to perish in view of half the town without an effort to rescue them?

A slender boy ran out from the crowd. He sprang upon the solid ice near shore. He seized the rope. He cautiously dragged it for some distance. He then lay flat on the ice and slowly crept onward.

After what seemed an age to the breathless watchers on shore the boy, at the risk of his own life, had worked himself near enough to the drowning men to throw the rope to them. The rope was seized by one of them, and he was dragged up on the solid ice by the strong men on shore.

The rope was again thrown out, and the other two men were dragged out together.

The first man rescued was more dead than alive, nearly drowned and chilled to the marrow. In a few minutes he would have died of the cold. The other men were in little better condition.

Cheer on cheer arose all along the river front. Above the din could be heard voices calling for the brave boy.

But the boy rescuer could not be found.

In the excitement immediately attending the rescue, his part of the work completed, he had quietly slipped out of the crowd and out of sight, to avoid undue attention. But while he quitted the scene, in the shadow of the docks, to prevent being seen, he listened to the shouts of the hundreds on the river bank; and he must be pardoned if his heart beat a little faster with pleasure and pride at having saved the lives of three of his fellowmen.

Modesty forbids naming that slender boy in this connection. It is enough to say that he was a poor boy, and that the glad laugh of childhood had often been supplanted by the pinched and blue expression of suffering, while chill winds pierced his thin and patched clothing to the shivering flesh beneath.

The Fugitive Is Not Caught.

Mystery hung over the fate of the marshal. Later it was certainly learned that the man who had fled across the river on the ice was he. But whether he had reached the far shore in safety could not be known. Many were the conjectures; and as the weeks passed on without tidings of him it was concluded that he, too, had broken through the ice and, with none to aid, had perished in the chill and angry flood.

The fugitive's movements previous to starting across the river were learned from the engineer of the Columbus, who was a friend to him. As had been suspected at the time, he had lain hidden in the coal room of the steamer when the officers were searching it the first time. When he learned that another search would be made of the boat he prepared to keep just ahead of the officers and make his escape as soon as they should quit.

When they came he carried out his plan. He moved from place to place until he had reached the wheel-house. When the officers came to this they opened the trap door on top of the outer wheel and peered down. At that moment the hunted man sprang out from under the gunwale and fled into the semi-darkness. He had put stockings over his boots, which aided him in sticking to the ice; and he thus had quickly distanced his pursuers.

The ex-marshal had been almost forgotten when one day there appeared in one of the newspapers an interview with a farmer living about four miles up the Maumee. The farmer stated that on the night the ex-marshal disappeared a strange man came to his door about twelve o'clock and asked for something to eat. He was taken in and set down before a hearty meal. Having eaten in silence, the stranger asked the farmer what he would charge to take him to the town of Perrysburg, ten miles up the river.

A price was agreed on, and the farmer was asked to get his team and wagon ready at once. A good quantity of hay was placed in the wagon and the stranger, after saying officers were after him and that they must travel fast, lay down in the hay and went to sleep. They reached Perrysburg about two o'clock. The farmer awoke his passenger, who asked him what he would charge extra to cross the bridge over the Maumee at that point and carry him down to Toledo. The farmer named a price, to be paid in advance. The stranger produced the money, and they started—twelve miles on the back track, but on the opposite side of the stream.

Under the stranger's directions, after reaching Toledo, the farmer drove down the street to the ex-marshal's now empty and deserted hotel, the stranger jumped out of the wagon, bade him good-night—and disappeared in the darkness.

The publishing of this adventure reawoke the excitement which had somewhat abated; and many citizens as well as the officers on the case took up the clew and hunted the fugitive far and near, high and low, but without success. Three hundred dollars reward for his capture had been offered; but no man was fortunate enough to claim it by capturing the fugitive.

Later He Gives Up to Sheriff.

Some four or five months later, after all excitement had died out and prejudice had cooled, the brother-in-law of the ex-marshal, with the fugitive in his buggy, drove up to the office of the sheriff. The brother-in-law claimed the reward and got it.

Then it all came out that the fugitive had been hidden on the premises of a well-known criminal lawyer all the past months, having spent most of his time in a dry cistern under the house.

The reward was used to pay the prisoner's trial expenses; and he was finally acquitted on the ground of self-defense, since it was proven that some of his assailants on the night of the dance had carried deadly weapons.

The scenes of bloodshed and dire consequences of dissipation which I witnessed in Toledo made so lasting an impression on my young mind that neither time nor eternity can erase it.

The evil I saw from day to day as I passed back and forth, vending my candy, raised up in my soul an intense hatred for vice in all its forms, even its most alluring, and fired me with a fierce determination to die rather than yield to temptation to do wrong. Often the boys of my age said to me:

"Take a cigar with me, won't you? What are you afraid of? Your mamma won't let you? Ha, ha!"

"Take a drink of beer. It won't hurt you."

"Have a lemonade, with a little brandy to season it. Don't be a fool or a coward."

"No, sir," I invariably responded. "I do not wish anything of the kind."

I had often been asked to sign the temperance pledge by well-meaning persons who did not really know me, but I always had declined. I felt that a firm resolution down deep in the heart was far better than promises on paper. I knew boys who belonged to the temperance brigade, and I also knew that they secretly broke the pledge. Therefore I had little respect for the deterrent effect of a promise on paper. I had known young men of wealthy and refined families, whose good mothers had instilled into their minds the highest ideas of honor and uprightness, but who forgot it all when out of sight of home and plunged into folly and dissipation to their lowest depths.

As the years of my boyhood grew into youth and I was not many years away from manhood my hatred of false pretense and white lies was intensified by what I saw about me daily. I held myself aloof from the youth whose station in life was less arduous and more comfortable than mine because they, with few exceptions, indulged in evil things which I contemned. They smoked, chewed, drank, swore and lied with calm and sober faces; and some of them turned up their noses at the "boy who peddled candy." But, in my innermost soul, I pitied them for their false views of life and their shams and pretense.

I watched, in after years, the careers of those young men. One of them went to California, murdered another while in a drunken frolic and was hanged; and others became confirmed drunkards, suffering all the evils which follow in the train of strong drink.

Drunkard Dead in the Gutter.

I knew a young Irishman whose parents were industrious and respectable in every way. He was two years older than I and worked around the docks, helping to load and unload boats. After working all day he would adjourn to the nearest whiskey shop and drink until nearly insane. Then, with eyes rolling and arms waving wildly, he would start home. He would thus reel along, shouting and screaming at the top of his voice, a picture of abandon and wretchedness seldom witnessed. He often fell in the gutter and sometimes there remained till morning or until some passer-by lifted and carried him to shelter, still insensible.

He went on from year to year till one winter's morning he was found lying in his accustomed bed,—the gutter,—frozen to death.

What a history for that short and sad life. After years of sodden dissipation he had died a drunkard's death at the age of seventeen.

White Whiskey Used as Decoy.

I knew the keeper of a store in the lower town of Toledo who was so lost to decency that he kept a pitcher of white whiskey and a full goblet beside it constantly standing on his counter. That white (or Canadian) whiskey was not put there as an act of hospitality for men customers, but it was intended to deceive the unwary youth and even women and girls who came into the store. Many a boy, hot and thirsty on a warm summer's day, went into that store, saw the supposed cool water there, eagerly grasped the full goblet and drained it before discovering he was swallowing liquid fire and possible future ruin.

I say future ruin,—for not a few boys there had awakened in them for the first time that latent thirst that was never afterward quenched except over the bar of some low groggery.

The store keeper had many a hearty laugh at the expense of his victims, but he never seemed to realize the evil he thus was planting not to be eradicated through eternity. He worked out his mission here on earth and died. There is no doubt that in the spirit land, wherever he may now be, he long since has been joined by many of the wrecks which he there started as derelicts on the ocean of life, to drift abandonedly for a time and finally go down into the dark waters of despair.

For two years business had prospered with our family, particularly with father's end of it—his bakery and confectionery. He was well established and had a number of customers. The future looked bright indeed. But both he and mother wished to go farther west and buy a farm, so that we children, in later years, would be sure of a good home and be independent. Therefore father decided to sell his business in Toledo.

His Father Loses Shop by Fraud.

The bakery was taken over by a man who had been employed by father for some time. This man had others associated with him, but they made only a partial payment, giving a mortgage on the place and stock for the balance due. Through some sharp practice father never received a cent additional and could do nothing with the mortgage. Thus he was not only defrauded out of the money due but lost a most promising business which undoubtedly would have made us all independent for the future.

This loss left us worse off than we had been for years. Father was entirely at sea, not knowing which way to turn in an endeavor to get the bare necessities of life, which were very pressing.

Father had been particularly unfortunate in this respect. It was one of his chronic weaknesses to take a man's word for future performance—which, in many instances, was never kept. Time and again he had been grievously defrauded, losing hundreds of dollars—and every single dollar in those early days was worth a hundred now. Alas! now, again, late in life, he had once more lost everything. His well built up business had taken flight, and he must face the stern realities of life, still at the foot of the ladder. He had almost lost heart and had no capital to speak of. The outlook was cheerless indeed.

Finally father decided to move to Grand Rapids, Michigan, then a town of three or four thousand inhabitants. When we went there, in 1849, it had neither railroad nor telegraph line. Father managed somehow to build an oven and commenced baking bread and crackers. All crackers were rolled by hand in those days, a slow and tedious process.

The Government had established an Indian agency in Grand Rapids, and several tribes assembled there annually to receive their annuities from Uncle Sam in gold. The Indians seemed to have no conception of the proper use or value of money.

As soon as their gold was handed over to them the squaws would spend it for gewgaws and raiment all out of keeping with the wild life of an Indian. It was a common thing for them to buy several yards of the most expensive broadcloth, fold it in the shape of shawls, without hemming or other needlework, and wear it across their shoulders as personal ornamentation. Broadcloth and Indian squaw made an incongruous combination to the eyes of the civilized white man.

The majority of the Indian braves would spend their gold for bad whiskey and engage in disgraceful drunken orgies, during which crime was rampant.

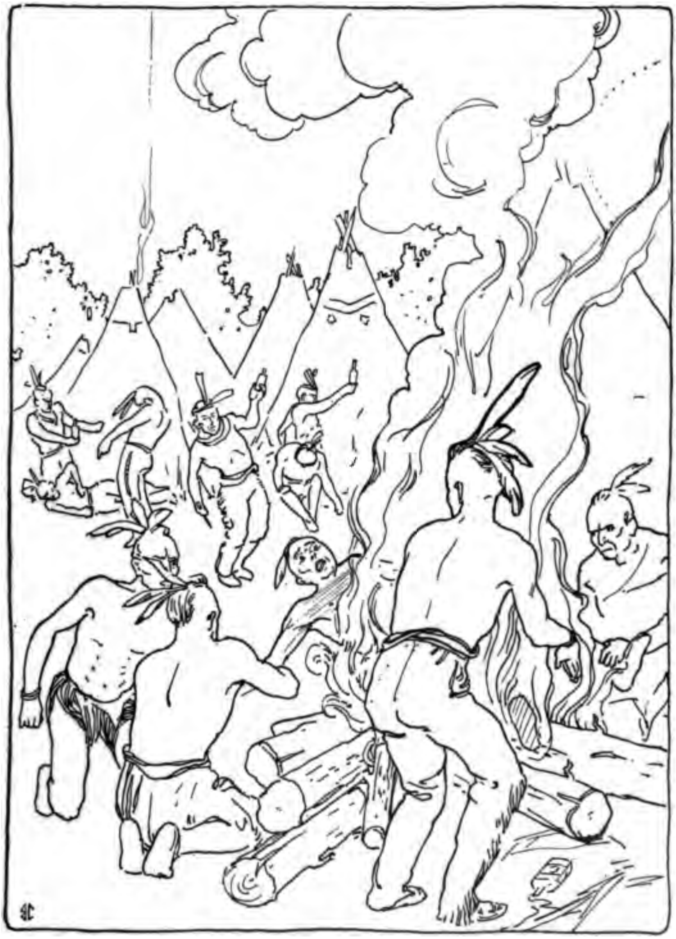
Indian Warrior Is Roasted Alive.

On one occasion the Indians were camped on the bank of the Grand River, just above town. While nearly every brave in camp was full of belligerent "fire-water" they got into a general fight, and one of their number was held over a blazing log heap until he burned to death.

Every spring the Indians came to the Grand River in the vicinity of our town to fish. They found fishing particularly good on the rapids below the dam. The river was alive with fish. The boys were wont to say:

"You can't throw a rock in the river without hitting a fish."

There were many sturgeon weighing from twenty-five to seventy-five pounds. We boys would catch them in dip-nets below the dam and sell them to the farmers at twenty-five cents each for average size. The farmers would salt them down for winter use. At other times we would float down



LIVE INDIAN ROASTED ON LOGHEAP.

stream in our light canoes and spear the sturgeon as they swam up the river to their spawning ground.

Has an Adventure With a Sturgeon.

On one occasion three of us were spearing sturgeon when a big fellow was struck just as he was passing under our small canoe. The spearman awkwardly held on to the spear, and, between him and the large fish, the canoe was upset. In a flash we all were struggling in the swiftly flowing waters. But we soon righted the canoe, got into it and started after the sturgeon, still carrying the spear in his back. We finally got a hold on the spear, but it pulled out, and we lost our fish.

At another time, while spearing sturgeon, we neared the bridge without noticing it. Before we realized our danger we were swept against the ice-breaker above the bridge and the canoe upset. Two of the boys jumped for the ice-breaker, but I was thrown over into the river.

As I went over, in my excitement I caught hold of the upper side of the canoe, and the swift current pulled me under. I forgot to let go of the canoe, and I would have drowned if some Indians in a birch bark canoe near by had not quickly come to my rescue.

In those days the woods were full of wild pigeons, ducks, squirrels, turkeys and deer. Often the pigeons flew overhead in such numbers that they darkened the sky. One load of shot would bring down a large number if they were in good range.

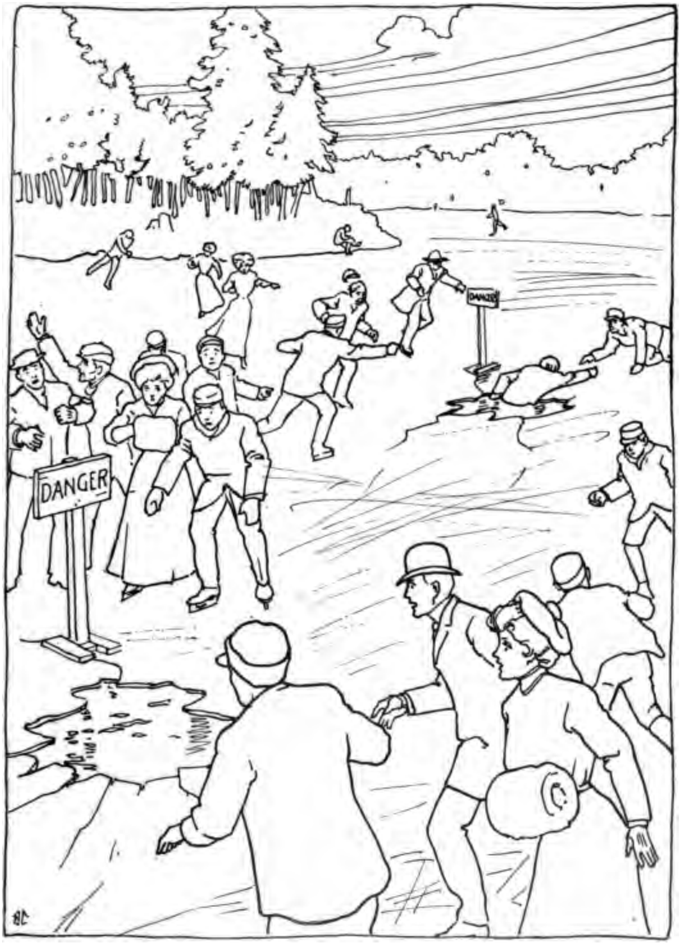
Is Near Drowning Shooting a Dam.

Frequently we carried our canoe around the dam and went several miles up the river to shoot ducks. On our return one day we decided to save the trouble of portage around the dam by going through the chute, where logs and lumber were floated over when rafted from up river.

Four of us were in the canoe. I stood in the bow to direct the steersman. When we neared the swiftly flowing chute we all lay down flat in the canoe. Unfortunately, as we started through, we were too near one side and the canoe was caught in the swirl and went down end up, throwing us all into the boiling waters under the dam.

Bounding to the surface, our canoe shot down stream; but we were "game" and quickly scrambled after it. Having secured the canoe, we returned and fished from the bottom of the river our guns and other accoutrements. We were not seriously worse off because of the accident, though some of us might have been maimed or drowned.

The woods were full of blackberries during their season. When they were ripe the farmers and half the townspeople would shut up house and go berrying. They would take along large lunch baskets filled with good things and have a picnic around the noon hour, when all would stop picking berries and gather on the grass under some delightful shade. A good picker could gather two or three gallons in four or five hours. What of the berries were not stewed or eaten in pies and puddings were canned for winter. There was no market for them close enough to make it worth while to send them away.



SKATER ESCAPES DEATH THROUGH AIRHOLE.

Between the plentiful berries, the wild pigeons, ducks and fish, no people in the world fared better for naturally produced fruit and game than the early settlers of Michigan. Most of us were comparatively poor, but all were contented, healthful and happy with what we had.

A Skater's Escape Through Airhole.

I recall a remarkable accident on the river while we boys were skating one winter's day. The rapid current in the river prevented the ice from freezing solid, as in more sluggish streams, and air-holes were plentiful. One of our companions skating very rapidly went into an air-hole, immediately disappearing under the ice and was swept down the river by the swift waters. To the astonishment of everybody, however, he soon reappeared, bobbing up through another air-hole some distance away. He had presence of mind to grasp the edge of the ice and hold on until we reached and pulled him to safety.

About this time my father bought a young pig from a neighbor and sent me with a light wagon to fetch it home. When I got into the sty to catch the young porker, which weighed about twenty pounds, I grasped him by a hind leg and the snout, closing my hand tightly about his breathing apparatus, without thought. I had some distance to carry him, and when I reached the wagon I found he was dying.

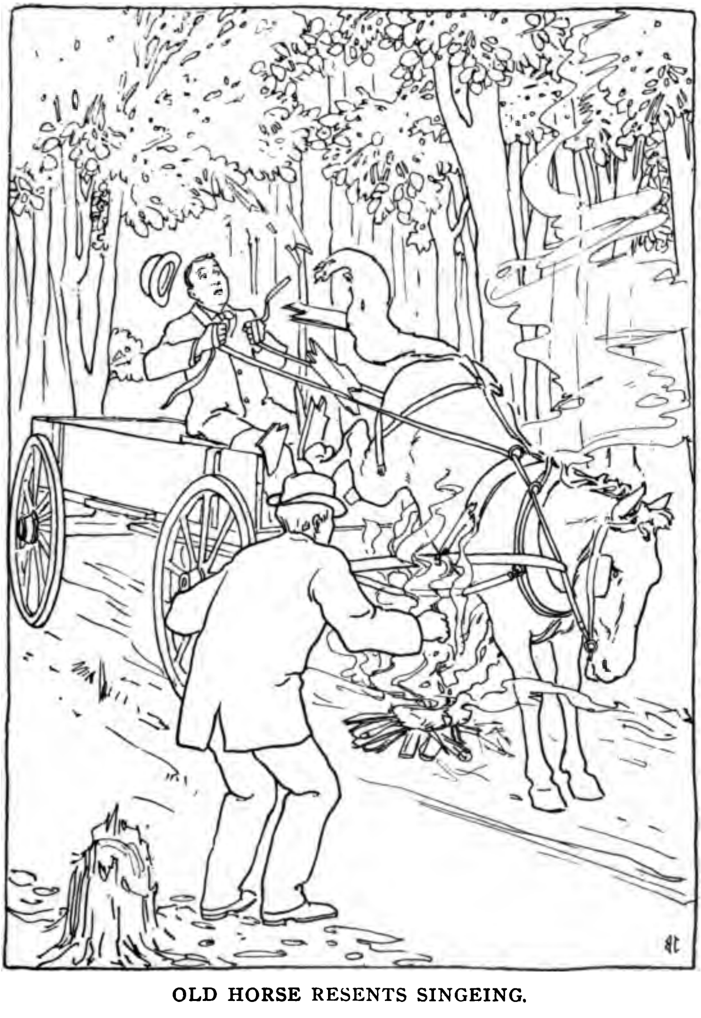
I had smothered him. Thinking that if I let him die without properly bleeding he would not be fit to eat, I ran to the house, got a sharp butcher knife and slit his throat in approved style. I took the pig home; but we immediately had fat roast pig, instead of a live one in the sty—as we had intended to let him grow for some time. Father and mother did not find fault with me for the accident but rather admired my forethought in bleeding the dying porker.

The Old Horse Plans Vengeance.

I always have a good laugh when I recall a trip a friend and I made from Grand Rapids to Kalamazoo, fifty miles south. We traveled in a light wagon drawn by an old horse with a queer disposition. While at Kalamazoo we bought from a farmer's son a wild red fox. When about half way home we stopped in the woods to feed the horse and eat lunch. The fox had been placed in a box. We took him out to have a look at him and offer him some meat. While we were handling him rather carelessly he made a sudden spring for liberty, probably liking the appearance of the wild woods around us. But he did not get away. Wonderful to relate, I caught him by the extreme end of his tail as he sprang and held on so tightly that my companion was able to secure and return him to his box.

When we were ready to proceed on our journey the old horse also acted as if he, too, had become attached to the wild region surrounding us,—for he refused to budge a step. We whipped and coaxed—but without results.

Finally my friend, who was in the wagon trying to drive, while I stood on the ground, suggested that I gather some dry leaves and twigs and start a fire under the balky brute. I gathered quite a quantity and placed them in a pile under the



OLD HORSE RESENTS SINGEING.

middle of the old scamp, then, at the word, set fire to the heap with a match.

The blaze flared up quickly and began to scorch the old fellow's belly so that the smell of burning hair was sickening,—but still he refused to go. He did not propose to run away from that fire. Not a bit of it.

Instead he shot out his hind feet and began to kick viciously. The dashboard was splintered at the first fierce onslaught; and there was prospect that nothing would be left of the wagon if the kicking continued. The driver shouted to me to remove the fire quickly, which I did—with much trepidation, fearing the doughty beast would use his teeth on me.

After considerable additional maneuvering we finally got the animal started. But he traveled slowly, and it was dark when we were still twenty miles from Grand Rapids. Being very tired, both of us went to sleep where we sat in the bed of the wagon.

How long we slumbered I could not reckon; but, by and by, we began to be slowly awakened by the bumping of the wheels in passing over obstructions at regular intervals. Bumpaty-bump, bumpaty--bump we went,—half in our dreams, for some distance before we finally got our eyes open and began to look about us.

The first thing to attract our attention was the blinding headlight of a locomotive only a short distance down the track on which we were riding, and the train was bearing down on us at a thirty-mile speed.

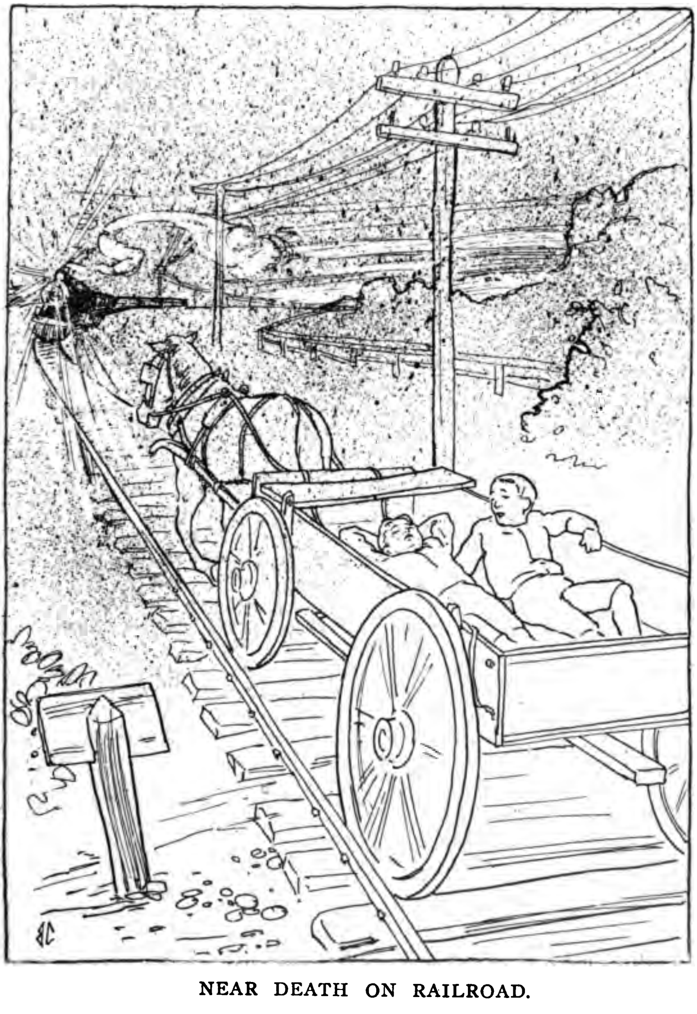
Nearly paralyzed with fright, we gazed in amazement for a moment, then, realizing our imminent danger, we sprang out of the wagon and dragged the old horse off the track just in time to save his carcass and the wagon.

The fast midnight express whizzed by, and we began to take our bearings. Later we found out the horse had left the country road some distance back at a crossing and taken to the railroad track—for what reason we could not imagine unless it was to avoid the deep mud now and then encountered. My companion laughingly suggested the contrary beast was trying to murder us for having built a fire under him.

We reached home about daylight; but our fox had disappeared from his box. He had gnawed his way out while we slept.

The incident of the horse and the fox was told to all the neighbors and I often heard the story related afterward.

The most cherished hope of my boyhood was to some day acquire a collegiate education. But the years passed one by one, until I was seventeen, and still there was little prospect of my going away to school or even of getting a fair education at home. At that age I had been placed in charge of my father's bakery, with several workers under my supervision.



NEAR DEATH ON RAILROAD.

Therefore father felt it would be difficult to let me go, there being nobody of trust to take my place.

Quits Home to Get Education.

Finally I determined to leave home without permission, go to Albion College and work my way through. One cold winter's evening, without saying good-bye to anybody, I departed and made my way that night fourteen miles to a tavern, where I slept. In the morning I mounted the stage coach for Kalamazoo and there boarded a train for the remainder of the journey.

I had left home in a snow storm and arrived at Albion at three o'clock the second night. Unable to arouse the landlord of the village tavern, I walked the streets to keep from freezing, until he opened his place about daybreak. I got breakfast there and at once went to the college building to meet the president of the school. That kind-hearted gentleman sympathized with my desire to gain an education and arranged for my attendance at the class rooms.

I had come away from home so unprepared that I had no clothing except what I wore and I had brought no books, though I had a number which I had bought with spare change as I could afford it. I decided to go back home, get my extra clothing and books and return to Albion, better prepared to enter the school.

When I got home all the family gathered about me and coaxed me to defer going away until the following autumn. I yielded to their pleading—and next autumn never came so far as my ever going to Albion College was concerned.

Takes to Wife Miss Clara Burch.

By degrees I relinquished the idea of a collegiate education; and when twenty years old, in 1855, I was married to Miss Clara E. Burch, who has ever since proven to be my good angel. Through all my subsequent years of business disappointments, sickness and other trials and discouragements she has stood by me nobly, always hopeful and believing that success would eventually crown my efforts. And she is still my pretty girl—(September, 1907); so that we expect many happy years to come.

Follows Father to New York.

The business panic of 1857 bankrupted many of the pioneers in Grand Rapids. Among those who lost all was my father. In a few months he moved his family to New York. And he later induced me to follow.

Attends Cooper Union School.

In 1859 Peter Cooper opened an evening school in Cooper Union Building, and I attended that school for two years. There I laid the foundation for whatever learning and technical knowledge I have since acquired. I worked at my trade, that of baker (at $7 a week) from five in the morning till two in the afternoon each day, went to the Astor Library for a few hours' reading and to Cooper Union school in the evening. By such industry and economy of time did I gain what knowledge I possessed at that period of my life.

Enlists in New York Regiment.

We lived in New York until the breaking out of the Civil War. With eight hundred others I enlisted in the First New York Cavalry, April 20, 1861. We spent six weeks drilling in the old Madison

Square Garden. The regiment was under the command of Colonel Clark, a retired army officer,—by volunteer resignation. He had been trained with the French cavalry, then deemed the best in the world.

We had been ordered to report in Washington on or before June 15. The day before we were to depart for the Capital Colonel Clark received word that a prominent politician was to take command of our regiment for a short time—"just for the military honor attaching to the position." Then he was to be sent to one of the European countries as a Minister. On his departure for Europe Colonel Clark was to resume command of our regiment and with us proceed to the scene of war.

When we were apprised of this arrangement we were very indignant, for we had become much attached to our quiet, dignified and very efficient Colonel.

And on Colonel Clark's announcement that he would play second fiddle to no man, though advising us to proceed to Washington as ordered, all but forty of us decided to disband and stay at home with the proud old Colonel.

I was among the adherents of the Colonel. The forty who remained in the regiment were incorporated with Colonel Harris' New York cavalry and went the following year.

Cavalry Effect in Civil War.

In ruminating on the history of the Civil War since I have often speculated as to what might have been the far different aspect of the contest in its earlier stages had that New York regiment of enthusiastic cavalrymen gone to the front that summer. Had they reported in Washington, June 15, already drilled, they could have been equipped for the field at once, and it is highly probable they would have been at Bull Run July 21, when the Union forces were so disgracefully routed for the want of a few hundred cavalry.

It is well known that the Confederates were being driven back by the victorious Federal lines until that disastrous charge by the black horse cavalry, which threw the Federals into disorder, overawed them and ultimately brought about the rout which has become famous in history. What might not a counter charge of a regiment of New York cavalry have effected toward stemming the current of that rout? Instead of a foot race to Centreville and even to the bridge at Washington, there might have been shouts of victory from the Federal throats that memorable day in hot July.

And Lincoln's armies might have been in Richmond within four months, or even four weeks, instead of dragging through four years of the bloodiest war in the annals of battle.

At that stage of the war a body of eight hundred cavalry was an imposing force; and its presence in the Federal lines would doubtless have lent sufficient courage to the infantry and artillery to change the fortunes of the day to their side.

The correspondent of the Charleston (S. C.) *Mercury* wrote: "When I entered the field at two o'clock the fortunes of the day were dark" (for the Confederates).

And the correspondent of the Richmond *Dispatch* wrote of the same hour in the day: "All seemed to be lost."

But a single charge of the cavalry reversed that gloomy aspect; and victory perched on the Confederate standard.

The plan to supersede Colonel Clark was the result of confusion of orders by the President and the Secretary of War. The Secretary of War had appointed Colonel Clark to the command of the regiment, and Lincoln had issued a commission to the politician above referred to, apparently not aware that Clark had been appointed. Naturally, the President's commission outranked that of the Secretary of War. Therefore the complication, and the subsequent clumsy attempt to straighten it out.

How little a thing may lead to great results. When Cæsar crossed a mere creek in Italy, called the Rubicon, the destiny of the Roman Nation was changed—a republic had been supplanted by an empire.

A slur on the French Embassador at Berlin cost France two of her finest provinces, excruciating humiliation, and both Germany and France millions in treasure.

Indignation that politics should have caused the virtual disbanding of that fine regiment caused me to lose interest in the army for a time, and I felt that I would not again volunteer. But that feeling of prejudice gradually wore off.

Again Enlists at Philadelphia.

In 1862 I was in Philadelphia on business. General Jackson's second raid up the Shenandoah Valley was made about that time, causing great alarm in the North, many fearing he would end by capturing Washington or Baltimore. A call was made for three months' volunteers. My patriotism having been rekindled, I enlisted in the First National Guards of Philadelphia. Colonel Lyle, the commander, was in the three years' service. I was enrolled in Captain Havens' company, under Major Arms. To avoid worrying my wife, whom I had sent back to Grand Rapids at the beginning of the war, I decided to conceal my enlistment from her and went in under the name of Bedford, and sent mail to her in care of a clerk in the Philadelphia postoffice.

Our regiment was sent into Maryland to protect Baltimore, if necessity should arise. But Jackson was defeated at Antietam and driven south of the Potomac, which ended the danger to Baltimore. We were ordered home, having been in the field less than a month.

On reaching Philadelphia I did not wait to be mustered out and receive my pay, but hurried away to Grand Rapids to join my family. Having enlisted for the good of the cause, I cared for neither discharge papers nor pay; my duty once having been accomplished, other minor matters were indifferent.

Makes Home in Chicago in 1862.

Residing in Grand Rapids for a few months after rejoining my family and discovering no opening for business or employment, we moved to Chicago—in the autumn of 1862.

DIARY KEPT WHILE A LAWYER.

PART IV.

Diary Kept While a Lawyer.

Having studied law for ten years, during odd times, at home or when away on business, I was admitted to the bar in 1870, while living at South Bend, Indiana. About that time, when I was thirty-four years old, my health began to fail, until chronic sickness set in that has followed almost to the present time.

Like all lawyers commencing practice, I found it difficult to make both ends meet. I herewith subjoin leaves from my Diary, which give an insight into my life while I practiced law for a livelihood.

Health Is Good and Hopes High.

THANKSGIVING DAY, November 25th, 1871.—We have had cold, stormy weather for a week past. The ground is hard and smooth so that a few inches more of snow would have give us the best of sledding.

Another year has nearly passed away and I am fairly embarked on the ocean of legal life. Thus far it has been smooth; no storms have ruffled its glassy surface; at least, what I call storms, for my life has been so full of trouble and disappointment that it requires more than an ordinary breeze to disturb my equanimity or to make me think it stormy.

My health is good and my hopes are high, without any undue fancies, I think. I wish to take the present and future just as they are without any air castles, but to keep it as one of the most prominent thoughts of my mind: that there can be no success for me, only as I earn it by hard, unwearying study and toil. I ask for no other; am willing to earn it in that way. I think by the help of my kind Heavenly Father, who has never left me and in whom I have greater confidence and faith than ever before, that success is certain. I feel that I wish to become "saturated" with law, both divine and human. I wish to think about it all the time, for to become a great lawyer, in my mind, is better than being a king or an emperor.

Week at a Time Without a Penny.

MAY 1st, 1872.—My first year as an attorney-at-law has elapsed and somehow passed. I cannot call it a year of practice, but still I have made a much further advance than was supposed possible a year ago. I have had two cases in Justice Court and have learned many law points that are of value. My greatest need at present is a law library; then I am ready for business.

We have seen many tight times during the past year. I have been a week at a time without a penny in my pocket, but we have managed to live it out and I am more determined to succeed or die then ever. I feel very thankful to a kind Heavenly Father who has kept us all in the past and have a faith that enables me to trust in the future, knowing that His loving care will not only be over myself but my family also. Therefore, I feel hopeful for the future, but realize more than ever the necessity of devoting every moment to hard study and preparation for my legal warfare.

There is so much to learn that it is with regret I am compelled to spend sufficient time to provide the ways and means for the support of my family, as I am still *Chairman of the Finance Committee,* but live in hopes that the time will come when my income will be sufficient to support my family without working at my trade, which I would be glad to do this spring if I could find work in this city. I hope to have two or three days' work before long.

He Tries Selling of Real Estate.

MARCH 3rd, 1873.—Nearly another year has passed since I have made an entry in this, what I will have to call my "Yearly Diary."

The past year has been one of success and discouragement. My family expenses have been very large, as my children are fast growing to men and women and we wish to dress and educate them similar to other young people of their age (and we are also keeping and schooling a half-orphan niece who has lost her father). In order to clothe and keep them all eating and in school I have been compelled to spend a large amount of time in trying to sell real estate, which I consider as so much time lost from my eventual success as a lawyer. My ambition and determination is stronger than ever to win the prize. I can say with more emphasis than ever that I would sooner be a great and good lawyer than a king, or an *Astor* or a President of the United States. I have small cases often before justices. That brings me more experience than money. I have three cases before the Circuit Court wherein several thousand dollars are involved and which I am in the hopes of winning, knowing they will bring me both money and help toward fame.

I feel the necessity more than ever of delving deeper into the wisdom of the law, both human and divine, though I am far advanced to what I was a year since. I hope to make still greater advances the coming year.

I have succeeded in buying a law library the past year and now have an office of my own.

I hunger to become, if it were possible, as familiar with law as was Lord Coke, Lord Bacon, Sir William Blackstone, Lord Erskine and many eminent men of our own land. If hard study will make up for lost years, I shall strive to follow in their steps.

"There is such a thing as constitutional religion. There is a certain temper and frame of mind naturally productive of devotion. There are men who were born with the original principles of piety and in this class we need not hesitate to place Plutarch."—Page 21, Plutarch.

"It has been and still is the fate of superior genius to be beheld either with silent or abusive enmity. It makes its way like the sun which we look upon with pain, unless something passes over him that obscures his glory. We then view with eagerness the shadow, the cloud or the spot and are pleased with what eclipses the brightness we otherwise cannot bear."—Vol. 1, Plutarch, page 15.

"It is said of Marcus Crassus that when on the trial of some person before the Roman Tribunal, against whom the public excitement was directed, and Cicero, Cato and Pompey were afraid to appear in his defense, that Crassus volunteered to appear, especially if the defendant was poor and friendless."—Plutarch's Lives, Vol. 3.

He Passes Through a Severe Winter.

APRIL 17th, 1873.—This is indeed the "winter of our discontent." The severity of the present winter has had no parallel, as the old settlers tell us, for thirty years and over. Somewhere about 1832 it commenced snowing in November and continued severely cold with constant snow until May. This seems to be a parallel winter, as our first snow fell on November 10th and now, the 17th of April, it is snowing as hard as any storm of the winter, though we had a few pleasant days the first of the month and the snow mostly disappeared.

If everyone has been as hard-up as myself this winter, few will wish to see another as long and tedious. Being blessed with one of the best of helpmeets is my good luck, as she is one who has the art of turning old clothes into new suits. Cooking, frying and preparing a variety of food to appease the craving stomachs of five hungry children is more art than some have, especially when the foundation of all has to be or consist of corn meal.

Has Only Fifteen Cents in Pocket.

APRIL 22nd, 1873.—Another of those severe storms commenced about dark last night. The snow came down and the wintry blast howled as though it was the first of the season instead of being a lingering wanderer from the frozen shores of the north, whence it should have betaken itself a month since. This morning the ground is whitened with three inches of snow; the air is so cold an overcoat and comforter are none too warm. Good wife said as I left the house:

"We are out of flour, meat, *corn meal,* potatoes, coffee, etc., etc."

Hungry children to feed at noon, and just fifteen cents in my pocket. "He hath said that not a sparrow falls to the ground without his knowledge." Still I must put forth my best endeavors to earn all I can, lest they go hungry.

Wins Case for Small Damages.

APRIL 29th, 1873.—Out of money, out of friends in time of need, but still not out of hope. Am having more or less law business every week, but the pay is slow. Recovered judgment for a client of sixty dollars against a whiskey dealer who had been selling liquor to a habitual drunkard. The new temperance law allows the wife to bring suit for damage. This was the first case under the new law and created some excitement and the temperance people are jubilant for the victory.

My business is growing slowly and surely. I find it takes time and patience to build up and establish a reputation as a successful attorney. We have had some snow and plenty of cold weather since my last entry, but to-day seems a true spring day. The wind is balmy and fresh; the sun shining brightly and all nature seems gay to see the long winter pass away. Thus it is with men and seasons and reminds me of the words of Longfellow:

"Art is long, and Time is fleeting,
 And our hearts, though stout and brave,
Still like muffled drums are beating
 Funeral marches to the grave."

And I quote again, from memory, having forgotten the author:

> "When I see the rich and great
> In the pride and pomp of their wordly estate,
> I ask myself a hundred years to come
> Where will these mighty millions be?
> Answer: Scattered on the strand
> And buried beneath the sounding sea."

Thus is life. To-day we live burdened with care; to-morrow we are gone. Ask the spirits where, for man has gone to his long home and the places that know him now shall know him no more forever and forever.

Sells Carriage to Pay on Piano.

MAY 1st, 1873.—This is one of those cold, wet, gloomy spring days that Bryant speaks of when he says the rain comes "Down, down, falling direct into the ground." But he refers to what we call a cold drizzle, sort of a weeping day, when a person's soul seems to fall into harmony with the black sky and lowering weather. These days always make me melancholy and sad; throw a sombre shade over my brightest thoughts and seem to clothe my mind in the draperies of mourning. My thoughts come in harmony with all of my surroundings and prospects. While bright, clear weather seems to add to my courage and assist me in fighting my way through the obstacles that surround me. Such days as this take away what little hope and courage I have left and I seem surrounded with a wall of blackness and hopelessness through which there seems no way of escape. I like a summer shower, but when these weeping days come, I seem to melt down, and, like the rain, ooze and sink into the ground. We sold our carriage yesterday (taken in a real estate sale) to help pay for the piano, thinking it better that the children should go on with their music lessons and we will walk, denying ourselves for their good.

Fair Weather Comes at Last.

MAY 6th, 1873.—At last we have beautiful weather. The storms of winter have fled away to their northern home. May blessings of a kind overruling Power attend and keep them for a long, long time. We can dispense with those attendant satellites of old King Boreas.

Forced to Move by Saloon Man.

MAY 13th, 1873.—I have moved my law office to No. 61 Washington street and have very pleasant rooms at the rent of $10.50 per month. The store-room under which my office has been, at 101 Main street, was rented to parties for a whiskey shop. My temperance principles interfered with their business, so they gave me notice to leave; and, having no written lease, I was compelled to do so.

It is singular that almost all classes of men envy and try to hinder the success of a self-made man. No matter how big an idiot a person is, if he has been through college or a certain course of studies, no matter how much those studies may unfit him for the actual duties of life, everyone is ready to help him along and give him credit for more wisdom than he really possesses; but for a struggling man to whom a kind word would many times do more good than even money they have only frowns and stumbling blocks.

Still, there may be a wise purpose in all of this; as it sifts a man, takes out all of the vanity and useless flesh, so to speak, and prepares him for the battle. It enables a man to say:

"Thy will be done, not mine."

Reads "Plutarch" and Ruminates.

MAY 15th, 1873.—To-day, while reading in Plutarch's Lives, the biography of Alexander the Great and Pompey the Great came to my notice. The impression comes with overwhelming force of the flight of time; the shortness of life. While reading of these men, I seemed to be standing by them, their conversations and actions seemed so natural and life-like. Their loves and jealousies, their friendships and enmities so like our every day life. We see their counterparts everywhere. Yet they have been dead from two to three thousand years and soon, with all of our little cares, vexations and sorrows, we will also go to be forgotten with the millions that have gone before us.

"Like a swift-fleeting meteor, a fast-flying cloud,
A flash of the lightning, a break of the wave,
He passeth from life to his rest in the grave."

"'Tis the wink of an eye, 'tis the draught of a breath,
From the blossom of health to the paleness of death,
From the gilded saloon to the bier and the shroud;
O, why should the spirit of mortal be proud?"

Wins First Case in Circuit Court.

MAY 21st, 1873.—Our Circuit Court has been in session for three weeks. I hold six cases to be tried in this court. Only one of them has been tried. It was a case of false imprisonment upon which we recovered a judgment of $17.50. It being my first case in the Circuit Court and my first speech before a jury, Mr. Hubbard assisted me and we had to contend with George and Anderson, our two oldest and most successful attorneys. They did their best to gain the cause and are quite cut up that two young attorneys should beat them in a fair fight and an open field.

These Days Are Darkest of All.

JULY 7th, 1873.—If it were not for my great faith in destiny, it comes to me sometimes that it were better to lie down and die. But I now feel like a traveler crossing a bridge over some wide and rapid river. When he is about the middle, he feels the bridge shake and quiver in every joint. He sees it breaking up behind him and about to do so in front. To go back is death in the torrent; to press on he can but die. Thus I feel as though I had crossed about one-half of the bridge toward the fair fields of success. I see the torrent raging under and around; children getting ragged, myself getting almost too shabby in appearance to come to the office. In fact, I have remained at home several Sabbaths from church from that cause. All of us are getting hungry at times and living on the plainest of food. Yet more than all the dear companion of my life with her few joys and many sorrows is becoming weary and weak with her many severe and constant efforts to darn and stitch and mend and do the work unaided for children and all of us. It sometimes almost seems that for her sake I should turn back and earn bread and clothing in some other occupation. Then it seems that she is the guardian angel of my destiny, constantly urging me on, willing to do and work and suffer, so that ultimate success may crown my efforts. Then my own heart says: "Onward, victory or death." Yes, I will not die on the end of the bridge that I have already passed over. It shall be on the end that lies before me.

How painful it is to have friends misconstrue your motives, while you are struggling and working, denying yourself of every comfort and luxury, paying debts with money you should feed your children with and then to have a contemptible wretch, whose aspirations and principles are not above those of a serpent that crawls on his belly, tell you because you cannot pay him a paltry four dollars that you are a scamp and trying to defraud him. If God despises the poor wretch as much as I do, he will stand a poor chance in the final day. Well, I will not judge him; let him pass, and when I do pay him (and it will not be long) I will never notice him any more than one would notice the hopping toad or creeping turtle that never rises above the dirt.

Made a Dupe by Brother Attorney.

JULY 16th, 1873.—For about a week, I have had one of the most fearful spells of the blues (or the blacks would be the more proper word), as my mind has been as black and enveloped in more than Egyptian darkness. I could neither read, study nor think and became so fearfully discouraged that it seemed it would be a pleasure to lie down and die. I have been cheated, robbed and swindled by so many different persons that it seemed of no use to try and resist my fate and that it was my destiny to be plucked by everyone who wanted to feather his nest. Then the meanest and most contemptible part of all is that the very ones who have robbed you curse and blame their victim, I suppose, because he has nothing more that they can rob him of. I have been told since my youth that you must look on everyone as a cheat and a rogue and do business with him accordingly, but would not believe it to be true. However, sad experience is proving the old adage to be about correct and that it is the natural tendency of most men to overreach and defraud their fellow-men.

I begin to feel better to-day and hope to recover my usual courage and energy in another day or so.

I suppose the direct cause of my blues is from being so shamefully deceived by a brother attorney, who, taking advantage of my inexperience in some points of law, caused me to have two very important cases dismissed in the June court, which would have brought me large fees and what is even better, *fame*. Being associated with me in one we tried, he so managed it that we only recovered a judgment of $17.50; when, if he had not betrayed both myself and his client, we would have received at least $300.

It has taught me a severe lesson and in legal matters hereafter

I trust no man on the face of the earth, but will study up the law myself and proceed alone.

Reads Life of William Wirt.

JULY 31st, 1873.—To-day I have just finished the first volume of the Life of William Wirt. I have been edified and instructed. He was certainly an eminent lawyer and a man of fine abilities and also of extreme modesty, compared with our public men of the present day. He was offered the position of United States Senator from Virginia, but declined it, preferring to devote himself entirely to his profession. But very few lawyers have refused the offer of a United States Senatorship; yet many have refused an election to Congress, preferring the emoluments of a successful professional life. His advice to young attorneys is certainly profitable and interesting. He says:

First: "Adopt a system of life as to business and exercise and never deviate from it, only on extraordinary occasion."

Second: "Live in your office except at the hours of eating or exercise."

Third: "Answer all letters as soon as they are received."

Fourth: "Put every law paper in its place as soon as received."

Eighth: "Cultivate a simple style of speaking, so as to be able to inject the strongest thought into the weakest capacity."

Ninth: "Never attempt the grand or magnificent before common tribunals. The neglect of this principle of common sense has ruined many otherwise eminent lawyers."

Twelfth: "Never be flurried in speaking. Speak slowly, firmly and distinctly. Mark your periods by proper pauses and a steady, significant look."

"In complimenting your adversaries, let your manner be humble and sincere."

Again he says on page 145, Volume I:

"Endeavor to cultivate that superior grace of manner that distinguishes the gentleman from the crowd around him."

"Read John Horne Tooke's defense of himself in the state trials."

"Read Locke's Essay on the human understanding, to form a habit of correct reasoning."

"Never use eloquence before the court, but argue to its judgment."

In the second volume, page 122, Wirt speaks of Pickens in these words:

"He was a great man. On set occasions the greatest, I think, at our bar. Great force of mind. Strong and accurate judgment."

Admiration for Eminent Lawyer.

AUGUST 11th, 1873.—Having finished the second volume of Wirt's Life, I am drawn to the conclusion that he was one of the most eminent men of his day and certainly a man is truly eminent whose abilities are such that Jefferson, Madison, Monroe and others of the great political leaders of that day asked him to accept the position of United States Senator, promising that, without doubt, he would, in the regular course of events, be elected to the highest office in the gift of the people.

Yet such was his discretion and control over his feelings and aspirations that he turned aside from all of these glittering offers, coming, as they did, from men who had all three of them occupied the Presidential chair and who controlled, perhaps, more than any other three, the public sentiment of the day. The offer being almost equivalent to election, it would require a man of great self-denial to refuse this.

LECTURES AND CONTRIBUTIONS.

PART V.

Lectures and Contributions.

THE DESIRE OF ALL MEN—SUCCESS.

(Lecture delivered at South Bend, Ind., in the year 1872.)

Success is the Goddess of the day. She speaks with lightning speed under the ocean and around the world in a moment of time. She thunders along numberless iron rails over the continent. Singing the melody of Success, millions of workers chime in the chorus until the vaulted arches of Heaven ring with the echoing song.

All men and all races bow with more than oriental adoration before her shrine and with more than an Easter devotion cease not to cry day and night.

"Great is Success, the Goddess of the Americans."

Her temple is the blue sky above. Its columns are the mighty monuments of industry men have raised all around us. But she is a jealous goddess and demands the whole affections of the man who would climb the golden stairs that lead to her inner sanctuary. While all men sing her praises, how few grasp the treasures within her portals, though, with longing hearts and aching eyes, they press after her, she constantly receding as they approach, until death finally terminates the chase!

There is no subject that sends the life blood bounding with quicker pulsations through the veins of the young then this. It is this that fills up the day dreams of life. We are all building "air castles," all of them founded on a yearning desire for Success. Whether a farmer or mechanic, merchant or banker, doctor of divinity, law or physics, poet, or philosopher, each, one and all, hope in his day dream to become first in rank and position in the profession he or she may choose to follow through life.

If it is true that all desire Success, why is it we see so many wrecks of humanity scattered along the shores of time, but fragments of the noble men they once were? Is there not some cause for this.

Go with me to yonder cliffs overhanging the ocean. See that ship with her white wings speeding over its broad, deep breakers which line the rock-bound shores. She is guided by an unerring compass which her captain, before leaving port, had carefully corrected and examined by the most skillful master he could find, knowing that his voyage would be a successful one if the compass was true.

The scene changes. The storm-clouds gather, rank above rank in the heavens. We hear the moaning of the storm king as he marshals his hosts of destruction. The storm comes down like a wolf on the fold. Hark! Hear the booming of the signal gun of distress! It breaks like a knell through the storm. How the blood curdles and runs cold as we hear the shrieks of the helpless victims as they go down to their watery graves!

See the broken spar, mast, cordage and canvas! Relics of a noble ship and the loved ones who have gone down with her! Ah! why is this, we ask of a weather-beaten old salt who, more dead than alive, has breasted the storm and reached the shore. Says he:

"The captain left port on this voyage with a useless compass. He did not have it corrected by skillful workmen. The ship followed the compass and was thrown on these rocks."

The voyages of these ships are an exact semblance of the lives of men. Have we not a right to say that our success depends on our compass? I care not whether we be rich or poor; born with a gold or pewter spoon in our mouths or pitched out into the world to fight our own battles, the poor boy of to-day may be the Astor twenty years hence; the sons of kings may be outcasts and wanderers on the face of the earth before the gray hairs of early manhood sprinkle their brow,—for this is a world of storm, change and turmoil. Rocks of destruction lie on every side of the voyage of life.

Coming into the world as we do, with all of our faculties undeveloped, every object as strange as it is new, the glitter of the tinsel is as attractive as the sparkle of the diamond and it is only as judgment and comparison come to our aid that we are able to rightly estimate them at their proper value. So, in early life, opinions which wise men know to be unsound, systems having their foundations in mere imagination, like tinsel, catch the youthful eye and for a time seem of diamond lustre. As years roll on, experience takes the place of imagination and these false theories are discarded by all save the infatuated mass who hug fond delusions to their hearts, even to its last throb. Is this not the reason that we see moral wrecks in countless millions who strew the shores of time with the thousands of loved ones that have gone down with them in the same fearful ruin?

It is laid down as a maxim of law that there is a reason for every rule. Let us see, then, if we cannot find this philosophers' stone, this reason of failure and rule for success; this true compass that shall guide us safely away from or by these rocks of destruction and quicksands that threaten to swallow up the young navigator. Shall it be in the example of the many great and successful men who have gone before us, men who have come up from the lower strata of society and become leaders in commercial, social and political life? Did they achieve success by obeying the injunction that *labor* and *industry* were the chief elements of success? That is the compass we all must be guided by and if we accept this for our guide, we shall succeed in all of our lawful and honest undertakings.

Faint hearts never won fair ladies is as true in business as in love; and the sooner we come to the conclusion that success must be accompanied by hard, unyielding toil, the sooner and greater will be our ultimate triumph.

The lives of Milton, Shakespeare, Newton, Lord Erskine, Lord Eldon and Edmund Burke, all the sons of poor men, were lives of unremitting toil; and it is still more certain that the greatest poets, orators, statesmen and historians, men of the most brilliant talent, have labored and if they have been superior to other men, it is because they have worked harder than other men.

"There is but one mode of success in life and that is by hard labor," said Sidney Smith.

That is what enabled Edmund Sanders, the errand boy, to become chief justice of King's Bench; Jeremy Taylor, the baker's son, to become the eminent prelate and divine; and the immortal Haydn and Mozart, the sons of poor men, to become the eminent musical composers, whose melodies will thrill the hearts of humanity for ages.

If we read the biographies of distinguished men in any department of life, we find them celebrated for the amount of labor they could perform. Julius Cæsar, Henry IV of France, Napoleon, Washington and Wellington, different as they were in intellectual and moral qualities, were celebrated for the amount of labor they could perform.

The celebrated Dr. Kitts furnishes a remarkable instance of what perseverance will accomplish. Orphaned at an early age, homeless, friendless and slightly clad, too sickly to work, he was finally forced against his own wishes to enter the poor-house, where he was allowed two cents a week for spending money. This he kept to buy books with and on his holidays he walked to the nearest villages to spend a short time reading at the book stalls, then back again to his toil. Thus passed many weary years, but he did not give up and he finally became one of the most learned and honored men of his age.

There was Burritt, the learned blacksmith, who in those days toiled, not eight or ten hours, but fourteen hours a day at the forge, studying at odd moments until he learned twenty different languages and is known for his ability and has corresponded with the most learned men of Europe.

What of the immortal Lincoln, the martyred President, and Stephen A. Douglas, Horace Greeley, Presidents Jackson and Harrison,—but time would fail were we to mention the mighty army of poor boys who have become the leading men of the age.

So, my boy, never be ashamed if you are taunted for your lack of fashionable clothing; answer them as did the poor and unfortunate but honest young man who was charged with theft because friendless, when he said:

"You miserly governor and proud nobles,
All, all suspect me, and why?.
Because I am the worst clothed and least named amongst them.
But if there were a lattice in our breasts,
Methinks my soul would dare open it.
Wider than theirs."

Labor, then, we find to be the *fabled magician's wand,* the time compass. Statues in public should record its wonders; orations should be composed in its honor. Its insignia is the spade, the loom.

Young man, young lady, do not be faint-hearted. Though we cannot all be Napoleons or Joan of Arcs, yet we can excel in the vocations we choose in life. Nothing is derived without well directed toil and very little is to be had without it. What men, and especially young people need, is not help, but perseverance—a willingness to work and win, for patience and diligence, like faith, remove mountains.

There is not a young person before me but by the use of means, happily within the reach of all, may become useful, wise and perhaps eminent. Remember what Daniel Webster said to the graduate:

"Young man, there is plenty of room on the upper shelf."

We all desire success, from the sowing of fall wheat to the whiz and whir of the patent reaper. Hezekiah Green from Posey County says to Marindy Darling:

"May I see you safe home to-night?"

From the first dawning of love to the final tying of the knot by old Squire Fubbs so tight nothing under the blue vault can untie it—but an Indiana divorce, perseverance is necessary.

Young man, if you want to own a little farm, well tilled, and a little wife well willed, can you have your desires fulfilled if you idle your time away in the saloons when you should be striking sturdy blows with the axe or the maul; when you should be plowing or sowing, reaping or mowing?

Young merchant, will you ever retire with a competency if you spend your time in fashionable dissipation and leave your financial affairs to your clerks?

Young mechanic, will you ever be a foreman or contractor in your trade if you spend your time over the card and billard table, filling up the intervals with wine and whiskey drinking?

Young lady, will you ever become a good house-keeper or bookkeeper or telegraph operator or proficient in any of the other numerous vocations open to ladies of the present day, if your time is idled away reading the New York Ledger and other sickly love, blood and murder stories.

No! Never, never!

We might live to be as old as Methuselah, but could never gather wisdom from such sources.

It has been said that the bee will gather honey from the decaying carcasses of dead animals in the forest. If so, in that respect, he is superior to man, as man can gather wisdom only from pure sources. With men, the old adage is true:

"The fountain must be pure or the stream will be corrupt."

Thus, we see why so many fail in life; they neglect to seize the small opportunities and improve them.

Dreaming that in the bright future by some remarkable stroke of fortune wealth will flow into their coffers, when their wildest Utopian dreams will be fully realized; when the very rivers shall flow with milk and honey; the homeless shall have homes; the widows husbands; the orphans fathers, and all the world shall recognize the dreamer as a public benefactor. During life he will ride in a golden chariot and finally sail to heaven on a flowery bed of ease.

Young man, do not be so foolish. Buckle on the whole armor of energy and go forth, like a giant, determined to overcome every obstacle; read only the best books, go to the best and most successful man in your trade or profession and obtain from him this true compass, sound practical advice. Let it be your guide; turn away from the follies of youth.

But with high hope, ambition and strength of youth, success will crown all of your efforts and you will be respected by all whom business or pleasure my bring you in contact with.

Therefore, young man, do not give up because you see others have larger farms, stores or factories than you have, but strain every energy to acquire an equal position with your competitors.

This is, indeed, to be a man and the reward is in the race we run, not in the prize; and they, the few who have it ere they earn it, know not, nor ever can, the generous pride that glows in the heart of him who on himself relied.

When we see the foolish pride of some (not all) who have inherited fortunes, as though they were entitled to merit for spending other people's hard earnings, forgetting that any simpleton can spend money, but that it takes energy to earn it, we are led to exclaim:

> "O, why should the spirit of mortal be proud?
> Like a swift-fleeting meteor, a fast-flying cloud,
> A flash of the lightning, a break of the wave,
> He passeth from life to his rest in the grave."

Remember, though a man handles the plough or hammers the anvil, yet, in the words of the immortal Burns:

"A man's a man for a' that."

The life of a man, tempest tossed yet unsubdued, comes over our spirits like a calm succeeding a storm, and as we see his triumphs, it nerves us for the onset and we are ready to exclaim:

"What others have done, that I will do."

The secret, the mystery of the success of these eminent men is founded in their principles: *industry, frugality* and *perseverance.*

There never has been and never can be an instance of a young man making these principles a part of himself and failing to succeed in life.

A great humanitarian and philanthropist of England, in writing to a friend, said:

"The longer I live, I am the more firmly convinced that what makes the difference between one man and another is energy, invincible determination, a purpose once formed, then death or victory."

This quality will do anything that can be done in the world and no man can be eminently successful without it.

But it is too true that the results of every life are not a success. Too frequently it is a sad desertion of the ship, a lazy shirking of duties, but even a record of unsuccessful lives will serve as a warning to the young, just starting out on life's voyage.

Should they not be thankful if the quicksands, rocks and adverse currents, which threaten destruction, are pointed out to them? The stranded boat and dismantled ship are plain indications of

vocations we choose in life. Nothing is derived witho
toil and very little is to be had without it. What m
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idle your time aw
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ns holds the lines.
r master holds them
cry "Whoa," but that
vest home—and such a
withered flowers, bloated

suaded to gamble with cards
.' If you are asked to drink
No."
s Sunday eve, looking very red in
ish remarks about the weather, stam-
e cat's tail (Meow! Scat!) and makes
ally, look out! He is going to pop the ques-
he has bad habits. Be brave! Say "No!"
final shipwreck of life, he will carry you down
awful gulf of despair. Then, friendless, home-
that you can repeat that sad poem of

THE MONEYLESS MAN.

By H. T. STANTON.

Is there no secret place on the face of the earth
Where charity dwelleth, where virtue has birth,
Where bosoms in mercy and kindness will heave,
When the poor and the wretched shall ask and receive?
Is there no place at all, where a knock from the poor
Will bring a kind angel to open the door?
Oh! search the wide world, wherever you can,
There is no open door for a *moneyless man*.

Go, look in your hall where the chandelier's light
Drives off with its splendor the darkness of night;
Where the rich hanging velvet, in shadowy fold,
Sweeps gracefully down with its trimmings of gold;
And the mirrors of silver take up and renew,
In long-lighted vistas, the wildering view,
Go there at the banquet, and find, if you can,
A welcoming smile for a moneyless man.

Go, look in yon church of the cloud-reaching spire,
Which gives to the sun his same look of red fire;
Where the arches and columns are gorgeous within,
And the walls seem as pure as a soul without sin;
Walk down the long aisles; see the rich and the great
In the pomp and the pride of their worldly estate;
Walk down in your patches, and find, if you can,
Who opens a pew for a moneyless man.

, look in the banks, where Mammon has told
hundreds and thousands of silver and gold;
e, safe from the hands of the starving and poor,
les upon piles of the glittering ore;
p to their counters—ah! there you may stay,
limbs shall grow old and your hair shall grow gray,
l find at the bank not one of the clan
y to lend to a moneyless man.

our Judge, in his dark, flowing gown,
es wherein law weigheth equity down;
ms on the weak and smiles on the strong,
right while he justifies wrong;
es their lips to the Bible have laid
der a verdict they've already made;
there in the court-room and find if you can
Any law for the cause of a moneyless man.

Then go to your hovel—no raven has fed
The wife that has suffered too long for her bread;
Kneel down by her pallet and kiss the death-frost
From the lips of the angel your poverty lost,
Then turn in your agony upward to God
And bless, while it smites you, the chastening rod;
And you'll find at the end of your life's little span
There's a "welcome" above for—a moneyless man.

A true record of suffering and despair experienced by many men and women who live a life of intemperance and dissipation. They have driven away all of their friends; and, when too late, call for help and assistance from those they refused to listen to in other days, when their friends warned them of the consequences of their dissipated life. Now, they curse the church, the law and society for the suffering and sorrow they alone have brought on their loved ones.

Oh! what a lesson there is in the lives of unsuccessful men and women. I ask: Are you any better off if, in discouragment, you forsake the paths of honest industry? You see men getting suddenly rich by crime and fraud. It is a sad mistake many young people make. They wish to become possessed of wealth. An infatuation seizes them and they think they can accomplish it quicker by fraudulent and dishonest dealings than by honest industry. I appeal to you not to let such examples lead you to do any act which is not manful or honorable. Our prisons are full of those who have made haste to get rich. If it were not for this feverish anxiety to make money, no matter how, the thousands of young men who fill our prisons should and would fill our shops or would be on our farms or engaged in some honorable branch of industry, adding to the wealth of the nation, instead of being caged like wild animals, with keepers placed over them, and compelled to work in a more abject servitude than slaves in rice or cotton field ever did.

Young man, sooner than commit a crime that will consign you [illegible] to a living grave, resolve that you will, if need be, die a poor but honest man. Remember that all men on the face of the earth have a right to two things that law of republic or empire can never take from them. They are integrity and temperance. Never be a slave to vice or intemperance. Resolve that you will live a free man and as such you will die. But you are poor, and would be rich. You read with avidity books entitled the "Way to Wealth," "How a Penny Became a Thousand Pounds." "The Life of Astor," etc. But remember that it is a rule of moral and mercantile success that it requires years of honest industry to accumulate a competence. This is the road Cornelius Vanderbilt traveled. Commencing life as a poor boy, correct in his business principles and habits, and filled with an indomitable energy, he discharged every duty with so much care and promptitude that business men eagerly sought to have him attend to that part of their business that required other assistance. When he died he left somewhere between sixty and one hundred million dollars. Col. Tom Scott commenced life as a brakeman on the Pennsylvania Central Railroad and later was president of it and connecting lines to the Pacific Ocean. If he had been as obscene and dissipated as I am sorry to say brakemen are, as a class, he would in all probability have remained a brakeman. To illustrate the difference in the two routes that all men travel during the voyage of life, one guided by correct compass and the other by a false one, Col. Tom Scott had the true one and Col. James Fisk had the false one. Commencing life poor, compelled to fight his own battles, the latter soon began a life of dissipation and was dishonest and tricky.

Young man, which model will you choose? They point to so directly opposite parts of the compass that there can be no mistake as to where the results of their lives are. They are as far apart as the North Pole is from the South Pole.

But in your pursuit of wealth, you have left the beaten track. Your genius develops itself in invention; you believe that science has many secrets and that you have discovered the key that will unlock her hidden mysteries and that it is your high privilege to make them known to the world.

The lives of many bootless discoverers point with a warning to the will o' the wisp which has led them on with life's best efforts only to finally end as a dream in the night. If, however, you are sure you are right, turn not back dismayed by the scoff or the sneer of the public voice. The history of science and discovery have ever been allied to persecution. It requires more than ordinary courage to introduce and declare a new truth. "He is a blasphemer, stone him," was the language of the public and even now in this nineteenth century there have been martyrs to ideas; men whom the world have taken no notice of, only to point the finger of scorn until final success crowned their efforts. Then all men were ready to fall down and worship the golden calf.

How well I remember, when a boy, I think in the year 1846, Prof. Morse came to our village and put up a telegraph wire in the public hall, putting an instrument at each end. He gave a public free entertainment to all who wished to see the working of his new discovery. In the evening, the hall was filled with incredulous people, the leading citizens acting as though caught in bad company and ashamed of even coming to examine this new trickery, "hocus-pocus." Sleight of hand! Sending words through a wire! How contemptibly ridiculous! It would do to class with ghost stories and grandmother goose fables, but not to come before an enlightened audience. Thus they talked among themselves, while waiting for the Professor to give them a specimen of his jugglery.

Finally, the Professor announced that they were ready to receive and send messages and it was a long time before anyone could be induced to come forward and send a message, fearing they would be the butt of all jokers and the laughing stock of the town. Even when messages were sent and correctly received at the other end of the short wire no one had faith in it and believed the Professor a maniac or in league with the devil.

To-day, cut down the telegraph poles, roll up nearly a million miles of wire and throw it into the sea. Would it not be one of the most awful calamities that could happen to the world? To-night we send a message to a friend in China and he will have received it this morning,—or, in the correct language of time, twelve hours before it started. Thus, by this wonderful invention, we almost annihilate time.

It required years of time and patience to convince the world of its utility, but the Professor, though now gone to his long home, will ever be remembered as one of the great benefactors of the age.

Howe, the inventer of the sewing machine, struggled for years as a poor, hard-working mechanic, trying to bring his invention to perfection. It is said that for the last few years of his life the royalty received from the manufacture of sewing machines amounted to half a million a year.

McCormick, the patent reaper man, accumulated vast wealth.

I well remember Pullman, the inventor of the sleeping car, as a broken-down furniture dealer. His luxurious improvement of spending the night on the cars brought him millions of dollars. And here, in these twin sisters of the state valley, South Bend and Elkhart, we have men who are receiving large revenues from inventions.

We are as yet but on the outskirts of this wonderful Eldorado of invention. Our way and manner of traveling and of doing a thousand other things are as yet in a crude and undeveloped state. Our children of a hundred years to come will wonder and be astonished as they read in history of the crude methods and means of this our present day and time.

The success of genius and invention will have changed the whole face of the earth. BENSON BIDWELL.

MORSE AND OTHER INVENTORS.

CHICAGO, June 17, 1896—(Excerpt from Diary)—The invention of the electric telegraph was a worthy and a highly beneficial improvement over the old way of communicating with friends or for business purposes. By this invention which Prof. Morse gave to the world instant communication can be held with all parts of the civilized world. The inventor deserves highest encomiums for his perseverance under the usual difficulties that beset him—poverty and lack of business qualifications. Under all of these he struggled on until he achieved a success that will ever connect his name with one of the great advances of the age. He did his share toward advancing humanity to a higher level of existence, whereby men were drawn imperceptibly into a nearer brotherhood of that peace which brings to humanity prosperity and happiness. As each man does this, he earns a right to be remembered as a benefactor of his race and will receive his meed of honor from coming generations.

Money getters are soon forgotten; benefactors alone live in the future, and coming generations rise up and call them blessed.

The inventor of the telephone made a seven league stride forward as compared with the telegraph, as, by this last invention, men can communicate verbally, can know each other's voices, even though separated by a thousand miles of space, thereby advancing them upward toward a still nearer brotherhood and greater development, toward a larger enjoyment of life with a broader prosperity and a more perfect happiness. A loved son may be separated by business necessities from a mother who loves him as the apple of her eye. What joy to her mourning heart to talk with him over the telephone wire, to hear and know that loved voice as though but in another room. Thereby the telephone has added largely to human happiness; and Professor Bell will live among the imperishable names of history as one of the immortals whose fame will increase with the increased use of his marvelous invention.

The unexcelled prosperity of the last fifty years is due almost entirely to the genius of inventors. They have made new or made over by their improvements all departments of life,—domestic, agricultural, business and mechanical processes. There are almost no tools or machinery now in use that were used fifty years ago.

On the farms everything runs on wheels and by steam. The electric light has replaced the tallow candle of our boyhood and the oil lamp of our early manhood. The steam thresher has replaced the flail. The sewing machine has replaced the needle of the sewing woman who came spring and fall to do the family sewing. The organ and the piano have replaced the fiddle of our boyhood days.

Time would fail were we to try to enumerate the valuable inventions, one of the most interesting being the phonograph, which records the language and the voice of the speaker. We could very easily enumerate five hundred inventions of utility and value now in use. All of them tend to assist humanity in their toil in the store, the shop, the house and on the farm. All of them have done a large work in adding to the happiness of mankind and toward giving them larger views of life.

But people do not always wish to remain at home and toil,—even with improved tools. There are other delights in life besides the pleasures of good homes with all of their improved delights and patented comforts.

The most ecstatic and agreeable joy to the average person is the double-plus-threefold fun of rapid transit.

There are but a small number of mortals that do not regret the Creator did not endow them with wings with which they could soar to infinite heights and with unthinkable speed over valley, hill, lake and forest. What a pedestal of worship they would be willing to place the Author of our being upon if He would, by the exercise of creative energy and ability, cause delicate, beautiful, strong, widely-extended wings to spring, or grow, or sprout and then grow from each shoulder-blade, whereby we would no longer envy the flight of the birds, but would emulate and excel them!

When the torrid days of summer came, we would seek the Aurora Borealis and rest our weary wings on the branches of the North Pole and live on a diet of ice-cream soda! No longer would chills and aches and fevers torture these bodies! We would follow temperate seasons over every sea and mountain range and search out every spice island with its exuberant odors blooming.

While we looked down upon them from our aerial flight, we would laugh in derision at Mount Blanc, and Ranier, and Cotopaxi, that so long have flung back but a few of the feeble folk that have their rock-ribbed and icy sides tried to ascend.

Ceylon, with its beauty and wrecks of lost and dead races; India, with her mysticisms, her millions, and her beggary,—all would lie open to our eyes as with tireless wings and still unsatisfied wants we flew on and on, searching for that clime where our souls would be at rest. The wide circle of the hemisphere retreats from us until we, from far heights, see again Old Glory, "the Flag of the Free and the Home of the Brave."

Glad acclaims from each throat would arise: "Give me America without wings. With all of its failings, it's better than roosting on the shadowy North Pole, even with ice-cream soda as the ordinary beverage!"

Poor, misguided humanity! They now cry for surgeons to remove the wings.

"Give us the trolley, and we will be happy!" they shout.

This trolley car has been accepted by the people so readily, as a matter to be expected, that they have not taken time to study into its marvels and to come to a realizing sense that of all the many wonderful inventions of the last fifty years it is the most gigantic, complete and indespensable of them all. Do you comprehend, take hold of and grasp the mountainous fact that the trolley car, with its heating, lighting and propelling with the one element, the one current doing all three of those simple but very essential things, thereby surpasses in its usefulness and utility and mystery all other inventions combined,—that it is the top corner-stone of them all?

The locomotive in its day has been a very useful machine, and we do not detract from its glory when we say that it is now as far behind the age as the old four-horse coach was when the locomotive first came upon the stage of action. Is there an engineer of established reputation who, after due investigation as to the merits of the trolley car, would not be compelled to say:

"The locomotive is obsolete?"

He would also say that the carrying of fuel and water on wheels with which to generate steam is crude and wasteful.

He can fully satisfy himself that, by locating the steam plant and from it generating electricity, he is turning that fuel and water into a power that will carry itself with but little loss (according to the size of the conductor and voltage) any desired practical distance along the line of the railway; and that the motor car can use that power according to its needs for heavy or light loads, for level track or heavy up-grades.

And, still further, if he has gone into the depths of the subject, he will know that in the most intense cold weather there is no loss of that power from radiation and that it is even more intense in its action as a motive power even at sixty degrees below zero and that the most intense heats of summer do not interfere with its prompt and ready response to the movements of the lever, stopping, starting or going up even grades of 20 per cent.

One of the wonders of this very useful power is that trains of cars can run up heavy and long grades with as much speed as on a level track and without any effort of snorting and plunging and backing to take a new start, as we have all seen the locomotive do so many times.

One of the beauties of an electric railway system is that the track can be fitted automatically to protect the switches, which, if misplaced, ring an alarm in the station; also, if bridges are swept away or are on fire, alarms will ring in each station nearest the bridge. If a rail is broken or removed, alarms will ring; if two trains get accidentally or otherwise on the same section, bells will sound on each train, when the one having no right there will stop or proceed slowly until the bell ceases. Then they will know they have the right of way.

The acknowledgment of superiority will be given to the trolley electric railway over all other inventions as soon as it is understood in all of its details.

BENSON BIDWELL.

MAGNETISM OF THE EARTH.

CHICAGO, February 14, 1900.—Editor *Scientific American:* In the *Scientific American* of January 20th Doctor Rowland of Johns Hopkins University is mentioned as having invented a machine by which he has been able to discover the sources of the magnetism of the earth.

He says he was attracted to the subject because of the lack of an explanation of the cause of the magnetism of the earth. A description is given of his metal wheel, wound with copper wire, in which magnetism is developed by its revolutions, with the statement that the faster it revolves the more magnetism it develops. This convinces Dr. Rowland that the principle holds good for the earth and the other planets. As they revolve through space, "their immense weight and speed add to their magnetism."

It is rather amusing that an authority upon matters of science, as the *Scientific American* holds, should gravely comment upon so child-like an experiment with such an incomplete device, unless it was upon the principle that it came from high authority and therefore was beyond criticism.

Dr. Rowland must be an amateur on the subject of electricity and magnetism, or he would not have overlooked the fact that our modern dynamo electric generator is electrically and magnetically a reproduction of our planetary system. The armature with its iron core and copper coils represents our planet, we will say, and the field magnets represent the other planets. In fact, each planet is an armature for the generation of the electric current needed for its own use and is a field magnet to all of the other planets for the generation of magnetism, which acts upon all of the others and whose microbic lines of force pass in unnumbered millions throughout all interplanetary space.

These facts are all easily established by the knowledge we have acquired from the study of magnetic lines of force which surround and penetrate our earth.

It is hardly needful to remark that a dynamo has north and south poles; so has our planet. A dynamo can be built of sufficient diameter to have as many magnets as there are planets in our system. Each magnet represents a planet and each acts upon the armature and the armature reacts upon all of the magnets, each gaining strength from the action of the others.

Now, going back to Dr. Rowland's innocent statement that "the faster his wheel revolves the more magnetism there is developed," and "the faster the planets revolve the greater the amount of magnetism."

We all know that the amount of dynamic electricity and magnetism developed depends entirely upon the speed of the armature. Is it not therefore an axiomatic truth that the same rule holds good for the planets?

While your article did not mention electricity in connection with his wheel, yet I take it for granted that he is well aware that a current of electricity was developed in his coil. If not, why not? If the Doctor says not, we would like to have him test his wheel with a delicate galvanometer and if he can demonstrate that he has a dynamic machine wound with copper wire that will produce magnetism when in rotation without producing an electric current, then I will freely admit he has made a valuable advance in the science of magnetism and that he is one step in advance of the Creator of electro-magnetism.

This proposition brings us to the distinct question of what and from whence is electro-magnetism, not from whence and what is magnetism, because electro-magnetisms are each primal original elements of planetary life. We know this because the ancients found and we find magnetic and electric metal "iron and copper" in what we can call its natural condition of creation in the earth and of the thirty-six elements which make up our planet the lines of the spectroscope find nearly all of them in the sun and the other planets.

Therefore, if we find natural magnetic and electric ore in all of the planets, "there is no mystery or lack of explanation as to the cause of the magnetism of the earth."

Hardened steel, as well as natural magnetic ores, retains a large amount of residual magnetism when at rest. If a planet does not revolve on its axis, it is still charged with a large amount of native energy which we call magnetism. But if we now compel that idle planet to rotate on its axis, does there not occur the development of a new energy or a new element that did not exist on that planet when it did not rotate?

This development of a new species of energy is called electricity and with the development of electricity there is also developed a much larger per cent of magnetism than before existed and completes the parallel between our solar system and a dynamo.

We laid down the proposition that magnetism is and was a natural element that had existed in the metals of that planet from the dawn of its creation. Though the planet, if it is possible to imagine such a contingency, may not have revolved on its axis for a million or more years, it still had its vast storehouse of dormant magnetic life and power whose unseen lines of force were reaching out into the regions of space after the polar affinity of its brother planets with a pulling power that is inconceivable to the human brain.

These lines of magnetic force, we will say for the purpose of our illustration, were holding this now rotating planet in their vise-like grip, absolutely motionless. Therefore, the moment we apply our irresistible rotating power and compel it to revolve, there occurs what we can call a tremendous tearing and ripping and snapping of these lines of force, these tremendous unseen steel cables which hold this planet quiet. "Technically speaking, the lines of force are bent, not fractured," and this new element of electricity is developed from the friction of this planet forcing its revolutions against the resisting power of these lines of force.

There we have magnetism and electricity or electro-magnetism. The first is an absolute element of original creation. The second is the result of that creation carried out to its complete perfection. The first was required by its pulling power to keep each planet in its destined path; the second was not needed until the Creator said "Let there be light, and the evening and the morning were the first day."

Incidentally, I will remark that the power which keeps the planets revolving on their axes is apparently a different power to that of magnetism, which holds them to their paths in the heavens. Who knows what it is? Echo answers: "Who?" Only as an answer to all things we do not understand we say: "Divine Power."

I commenced by saying that a dynamo is electrically and magnetically a reproduction of our planetary system.

We have carried the argument to the point where our idle planet has commenced to generate electricity by the friction of its revolutions against the lines of magnetic force which come from the other planetary field magnets. This brings us back to our dynamo, whose armature, like our planet, is non-rotative. We turn on the power and there occurs the same result. The lines of force from the field magnets penetrate and try to hold the armature motionless, but a greater power is working the shaft. The lines of force are bent. The friction thereby caused generates an electric current which passes out on the line to light, heat and do work as developed in the trolley car and other motors.

Not wishing to make this article wearisome, I wish to ask a final question, viz.: Is not a modern dynamo a copy of the Creation and continuation of our planetary system?

BENSON BIDWELL.

EQUIPMENT OF ELECTRIC RAILWAYS FOR TRAIN SERVICE.

(An Address delivered at Rochester, Ind., July 26, 1893.)

In appearing before a society of men, and especially before an association having for its objects the further elucidation of the great problems connected with the practical application of electricity to the wants of modern society, thereby blessing and lifting the nations into a higher and more exalted state of life and the enjoyment of it than our fathers could have ever conceived of, it certainly is a compliment to the speaker to have the privilege of presenting his thoughts upon these subjects to an audience in full sympathy with the work we as electricians or electrical inventors have engaged in.

I will not make an apology for the little I know of this subject, but will add that little to the general stream of electrical knowledge, which the aggregation of so many active brains is rapidly making a vast volume of high tension and large amperage.

Such being the character and the purpose of our assembling, I am justified in the selection of my theme "The Equipment of Electric Railways for Train Service."

Ten years of testing and proving has lifted the electric railway from a toy, a dime-museum freak, to a position where its promoters advance boldly to the long-tried and thoroughly fortified railway locomotive, with all of its marvelous improvements and its one-hundred-mile-an-hour speed, the result of fifty years of invention, and we can say boldly and fearlessly to the puffing monster whose jaws reek in human and animal blood:

"We can do your work better and with more safety and at one half the cost you are doing it and without the bloody carnage through which you wade on your merciless wheels, which are followed by the undertaker and hearse, bringing desolation and woe to innocent families."

The propulsion of trains of cars by electric power is a thing of the present, though yesterday, or last year, it was seemingly something to be done in the dim future and its promoters were known as "cranks" of the first water because, forsooth, said the steam railway and street car superintendents:

"1st. There is not sufficient power in your mysterious fluid to propel the car.

"2nd. If there was, the wheels would go around and the cars stand still for want of traction, etc.

"3rd. If you had the power and the traction, it would cost too much. Therefore, it will never be used for propelling cars."

So said many wise men in those days, long ago, ten years in the past; but to their credit, be it said, the street railway men, when we convinced them, were the first to adopt electricity.

The steam railway men are not one mite behind the latter in business sagacity, and all we electric railway promoters need to do is to advance boldly to the attack and show them how we are going to do it; and they will very soon give us an opportunity to try.

The object of this paper is to help show how it can be done and to make suggestions whereby the general advance in that direction can be accelerated. The author of this paper expects to ride in an electric train from Chicago to and across Bering Straits before he ascends to where from the mountain tops of spiritual vision he can see the marvels of electrical illumination and application from the inner instead of the outer view.

First, last and all of the time, in working out this problem, we should keep in view the necessity of using a gearless motor for the movement of trains,—not only because it is noiseless, but also for its avoidance of complications. All who have been helping to solve the riddle know the vexation and worry caused by trying to do the work with gearing, whether it be with sprocket chains, or leather belts, or friction wheels, or cut gear. It is a sad chapter of money lost and annoyance endured.

Second, the motor must be indestructible from ordinary usage,—which implies that it will not become overheated when running an express train one hundred and fifty miles without stopping.

Third, it must be in build and endurance capable of doing as good and better work at a less cost of fuel than a steam locomotive—which means that it must be run farther and faster with more safety to the freight and passengers than its competitor.

Also, it must be entirely freed from danger of burning out or injury to its field coils and armature by picked-up electric currents which are so careless in their way and manner of leaving the clouds when the earth is in a negative condition. In trying to establish an equilibrum, it takes the shortest road to the waters beneath the soil. If it be an electric conductor, for an electric railway, woe to the ordinary motor.

With our indestructible, gearless motor, and the car heated and lit with the same power that gives it propulsion, we are ready to consider the road bed and its equipment.

First, the rails will be electrically connected with alarm bells in the stations, so that, if a rail is misplaced through a malicious desire to wreck the train or a rail is broken, these alarms will immediately sound, giving notice to the agent in time to stop the trains that are endangered.

Next, the switches will be opened and closed automatically by a system of soft magnets which can be charged and discharged by switching the current off and on from the nearest station.

If a switch is tampered with, an alarm will ring in the station, giving notice of danger.

All of the road crossings, either of other railways or wagon roads, will be fitted with automatic safety gates, electrically closed and opened by the pressure of the car wheels, making electrical contact between a source of supply and the system of magnets acting on the safety gates.

Having the track and switches fully protected from ordinary misplacement, we now turn attention to the bridges and culverts, which are a frightful source of accident to trains of cars, caused by their being swept away by flood and fire.

In the good time of which we are speaking they will be equipped with thermometers which will ring alarms in the stations when there is danger of fire or when they are swept away by floods of water.

Last, but not least, is the subject of keeping the wheels upon the rails, under all circumstances.

Giving the opportunity of high speed without the usual danger of the trucks jumping the track, this can be done mechanically or magnetically, as may seem the most practical.

BENSON BIDWELL.

TWO BOXES OF ORANGES.

I do not know as my story will be of very great interest to the reading public; but, as it contains a moral of some significance, I will write it more as an illustration of human nature, showing that "the boy is father to the man."

Once upon a time, many years since, two boys, twelve and fourteen years of age, lived in a city of some importance, near the northwest end of Lake Erie. Their occupation consisted in selling apples, popped-corn and the fruits of the season as they could obtain them. In those days there were but few railroads west of Buffalo. Therefore, the only communication between the eastern and western ends of the lake for five or six months of the year was by steamboats, sailing vessels, etc., and in the winter by stage and wagon around the lake through Pennsylvania and Ohio.

In those early days, oranges were but seldom brought west, there being only a small demand for them, as they were very expensive; but the first boat that arrived after the breaking up of the ice usually brought a few boxes which would sell quite readily for a few days, and all surplus stock would decay before being sold.

At the breaking up of the ice the arrival of a boat from the eastern end of the lake was eagerly looked for by the two boys, who wished to invest their small stock of money in the first box of oranges that should arrive.

Finally the long expected boat came in sight and throngs of people gathered at the dock to greet it, but the two boys were only intent on the purchase of the oranges, springing aboard the boat when it touched the dock and making their way to the saloon-keeper, who usually invested in fruit to sell at the different ports on the route. Of the stock of oranges laid in he had just two boxes left. One of the boys (we will call him Jim) thought that one box would be a good investment and would meet with ready sale at a large profit, but that both boxes would surfeit the market and that there would be no profit, if not actual loss. But Tom, being the older, overruled Jim and, as a compromise, they agreed to buy one box and, when that was sold, the other. The purchase was made and, with their baskets filled, they carried them from house to house until they had disposed of the whole box at a profit of one hundred per cent on the cost of them.

Jim was satisfied that the market was supplied and that it would not be policy to invest in the other box. But Tom insisted on doing so, thinking that, if one box sold at a profit, there was a chance for a profit on all they could get and a fortune within his grasp. The more cautious Jim let Tom have his way. The other box was bought and was offered in the market. But no purchasers could be found. And, to make a long story short, the second box mostly decayed or was sold for less than cost; and when the boys came to count up their money, after three or four days' hard work, they had received just the same amount as they had before they bought the first box. In other words, the second one, like the lean kine of Pharaoh, had eaten up the first one.

We might say, and truly, that there is the history of many lives written in this short story. How many hundreds, aye, thousands, of people buy two boxes of oranges where they should buy but one?

We see a young merchant prosper, doing a snug, safe business; wealth is flowing into his coffers slowly and surely. At one unfortunate moment envy creeps into his mind; he looks across the street and sees the old merchant of twenty years' standing and that he has a larger store and a heavier stock of goods.

Without weighing all of the different matters which should be taken into careful consideration, he resolves to outstrip all his competitors, rents a large and fine store, hires more clerks and, on the strength of a credit he has built up with care and patience, orders a large and costly stock of goods.

He soon finds his sales are not so brisk as they should be and is compelled to go on the street to get accommodations at a large interest. He cheers himself with the hope that trade will increase before other bills come due. Not having been established as long as his older neighbor, he finds he has a much larger stock of goods than his trade demands; in fact, that he has bought two boxes of oranges where he should have bought only one.

Each succeeding week drives him on the street to meet his accumulating obligations. The burden grows heavier with each passing month, until, prematurely old and gray, he gives up the task and, with ruined credit, broken health and a lost fortune, he finds that the second box of oranges was one too many.

BENSON BIDWELL.

INVENTOR AIDED BY THE LORD.

CHICAGO, July 2, 1905.—I feel impressed to write some of the circumstances connected with the invention of my trolley car. I do this for the reason that not only myself but many who know of my invention of the car are surprised when they fully understand that in the almost twenty-one years since I built my first trolley car there have been no improvements on the invention.

The cars are larger than mine were; so are the motors. But the trolley with its pole pivot and spring and wheel running under the wire are the same.

They made me put my trolley under the car both in Philadelphia and Boston, and the pole or arm was short; yet there is not the least change in its principles.

There were about ten to fifteen other men trying to invent an electric car between 1876 and 1884 in this country, England, France and Germany. To-day none of the appliances they used are on the car except the car itself and an electric motor.

When I fully decided to build models from which to pattern a large car I did not know any more about the subject than any of the other men and not as much, as many of them were building electric generators for lighting purposes or worked in such shops in 1880, which I had not done, having only chemical batteries and books on electricity. These books contained no new ideas on the subject, not even the latest ones in the public libraries, and my experimenting taught me that some of them were in error in some of their plans as to its application.

Those may laugh who desire to when I say that I believe there is a Being who knows all about electric development as it will be in fifty years from now or more. Therefore, not knowing what appliances to use to make it a success, I went to that Being, our God and Heavenly Father, and told Him my desires and from Him I received that knowledge I needed to make the trolley car a success. Therefore, the trolley car is not the result of my wisdom, but of the wisdom and revealed knowledge of God.

That is why it has never been improved.

BENSON BIDWELL.

ELECTRICITY VERSUS STEAM.

ROCHESTER, IND., September 3, 1893.—(Excerpt from Diary.)—Life with its complex problems is before the writer, who has but lately returned from seeing the World's Fair at Chicago and expects to return there on the coming morrow to commence the "beginning of the end" of his electric railway inventions, viz.: the equipment of a train of cars to be run by electricity.

While the writer has been ready for ten years to equip such a train the unbelief of railway superintendents of the possibility to run them efficiently and cheaply with electric power has delayed the work. I have seen them running by the eye of faith, these many years, on all of the main lines of railways and have waited as patiently as possible for the slow but sure movements of the wheels of Providence which were rolling each day nearer the fated moment when such equipment could be no longer delayed. Till the Christian development of the ages began to demand something better than the present car of Juggernaut which weekly adds to the list of its thousands of slaughtered victims, who leave a happy home for a day's ride behind a steam locomotive and are brought back in coffins or are cremated with the cars in which they ride.

This last week there have been railway accidents and nearly one hundred killed and many crippled; but it either requires the slaughter of war or of commerce to advance humanity to the point where they see the hand of the Lord trying to lead them to better things and, like the children of Israel, they have to be scourged all the way to the land of milk and honey.

The people, as a multitude, from the childhood of the present generation of fifty years of age, have associated the subjects of steam railways, deaths and accidents until they accept it as fate and look no farther, neither knowing nor caring whether there is a safer way of travel and a power that will transport them safely and speedily without the attending element of danger.

The Israelites were forty years going through the desert and wilderness. The same number of years have been passed to bring the people up to the borders of the electric railway age, where the coming generation will travel over and around the earth and return to their firesides in health and happiness, and will not be able to comprehend the dangers and deaths that attended their fathers when they journeyed from home.

BENSON BIDWELL.

DEMAND FOR THE COLD MOTOR.

CHICAGO, December 12, 1905.—Editor *The American:* In the *American* of the 11th you have an article by Thomas A. Edison upon the subject of obtaining electricity from a power plant located at the coal mines. His ideas are correct, provided you can use a generator of electricity that will deliver the power long distances with economy.

The present alternating generator is used for long distance transmission because you can get a high voltage (or a faster current) than with a direct current generator without heating the generator to the burning out point, but there is a waste of twenty-five per cent in transforming it into a direct current.

Prof. Forbes of London, England, who installed the first electric plant at Niagara Falls, in 1892-93, in an address before the electrical congress during the World's Fair on the subject of electric generators said:

"What the world now needs is a direct current generator that will send the current at high voltage a long distance without heating the machine and without having to transform the current at the loss caused by the transformer."

For the information of your readers who have no technical knowledge on the subject, I will explain to them that an alternating current is the same zigzag or jerky lightning they see during a thunder storm and that a direct current machine gives out an even flow of current like a swift, steady stream of water.

I had been working upon this subject of a high voltage direct current generator for some years before Prof. Forbes made his speech, but my time had been taken up with my trolley cars and car telephone system until about a year ago, when I commenced preparation to bring out my cold motor.

I wish to explain that the terms "motor" and "generator" are interchangeable. A motor will burn incandescent or arc lights. A generator will run a car with this exception: that we wind different sizes of copper wire upon them, depending upon the kind of work they are to do. Therefore when I speak of my cold motor, I include a cold generator or the generator that Prof. Forbes wanted. By it I can get as high a voltage as can be gotten from an alternating machine, even as high as a 30,000-volt direct current; and I expect, before I am through with the machine, I can get from it 100,000 volts and that I can deliver 500 miles from the generator and I can keep the machine from burning out.

At nearly all of the annual national electric conventions held for the last three years the speakers have called for cheaper electricity, a current that can be used for heating houses and cooking with,—in competition with coal.

It is and has been one of my plans to supply that cheap electricity with my cold generator so that houses can be heated and cooking can be done with one of the cleanest and most odorless heats known to humanity. This mysterious and little known agent of power, light and heat has a broad field of development before it and young men who have enough grit to take up some one line of its development and cling to that one line, forsaking all others, will achieve distinction in coming years; for they must remember:

"Grit wins: it always wins, though the days be slow,
And the nights be dark 'twixt days that come and go;
Still grit will win—its average is sure;
He wins the most who can the most endure;
Who faces evils, who never shirks,
Who waits and watches, and always works."

BENSON BIDWELL.

ELECTRIC TRACTION FREE OF COST.

ROCHESTER, INDIANA, July 29, 1893.—Editor *Electrical World:* I see by your paper of this date that it seems a new feature to some that arc lamps can be run with a low tension or 500-volt current being used in running electric cars. This was fully shown in electric railway at the Philadelphia Exposition in 1884, where I ran the cars and five arc lamps and heated the car with one current.

Practical electric railways have advanced to a point where I am willing to take a contract to build one in any city of from fifteen thousand inhabitants up to any size and will light a sufficient number of arc and incandescent lamps to pay for the entire expense of propelling and manning the cars.

The result will be that all of the revenue from the cars will be a clear profit.

By my present improved system, the armatures or fields will never burn out. When the plant is once in running order, the equipment will last a lifetime.

I will do this by either the overhead wire or the underground conduit system.

Within a few weeks I shall be ready to give you full details, with cuts illustrating my improved system, whereby cars can be run absolutely without cost for running expenses and in all cities.

A three-cent fare could prevail and more money cleared than by the present system of five-cent fares and the cars bearing all of the expenses.

By the present system, the repairs to the motors require a large expense account. The president of one electric railway, in a city of twelve thousand people, said to me that at one time they had eighteen burnt out motors in their repair shop.

I shall bring out a motor that cannot be burned out by either a trolley or lightning current.

BENSON BIDWELL.

ON TRAINING THE CHILD.

ROCHESTER, INDIANA, July 15, 1893.—(Excerpt from Diary.)—For nearly four years I have lived in this little town. Many things pleasant and sad, amusing and depressing, have occurred. Yet we live, exist and have a being, for which we ought to be thankful,—but are not always. So, in the struggle for life, we forget the many blessings we receive and grumble at those we have not, thinking they belong to us by some natural inherited right,—which is a mistake. Seeming natural to our human nature, we believe that because we are born we are "heirs to all things," which is true, provided we use the proper mental and physical exertion to secure them.

The Creator of man has endowed him with a multitude of faculties, and a steady application of any one of them in a continuous effort will give him all of the needed food, clothing and a home.

It is true that a failure to train a child, while his mind is in a plastic or moulding shape, that he must be responsible for his own success, leaves the great mass of men in a condition where financial failure is as sure to meet them as is death.

I can look back to the early life of those whom I know and see where a half hour's instruction on the subject of honesty and restitution would have saved an entire family from financial and moral wreck.

A boy cheated his brother in a trade. The mother, thinking it was a bright trait in the boy, overlooked it. Finally, after years of driving sharp bargains, his mind became so blunted that he could commit fraud to gain property, and spent years of his life in disgrace to atone for the offense.

A half-hour's talk on restitution at the time of his first bargain would have changed his life and he would have been an honor to his country and family.

BENSON BIDWELL.

ATMOSPHERIC ELECTRICITY PREFERABLE.

CHICAGO, December 16, 1905.—Editor *The Tribune:* In the *Tribune* of the 15th you have an editorial quoting from Thomas A. Edison upon the question of "taking electricity directly from coal." That subject has been discussed at different times for the last ten years without any visible progress up to the present. While it will be done at some future time, yet I doubt very much as to its value commercially.

If electric inventors will turn their investigations in the direction of separating the electricity from the air or, in other words, from the moisture in the air and the clouds, they will meet success at a much earlier date, both practically and commercially.

The amount of electric power above and surrounding the earth is inconceivable to those who have not made it a study, and the most remarkable fact connected with this question is that the amount of power to be had from that source is such that if all of the machinery, light and heat used in the world in the factory and for heating buildings were derived from the clouds, the supply would be equal to the demand and could not be exhausted; for the earth is a great dynamo armature which is generating electricity at the rate of millions of watts every twenty-four hours.

The moisture in the air is a storage battery, always full, in the sense that a pail is full of water and is running into the pail as fast as it is used up.

The amount of electric power in coal is limited, not only in its output per ton but also in the amount stored in the mines.

Therefore the larger field is atmospheric electricity and also the one the most easily solved. The process, when complete, will be very simple and the cost will be so low that it can be sold for heating, lighting and power for less than any other fuel, with possibly the exception of water power, which is limited in its practical use to its vicinity and also limited in quantity.

Perhaps the best feature connected with this plan is that the trusts cannot control its sale. The machines for this purpose can be built cheaply and used in almost every house, at least in the large buildings.

The poorer people can use it for lighting, heating and cooking and a lazy man, on a cold day, can sit by the heater and press the button, while his wife hustles for eatables.

When this electric air separator comes into use, the smoke, ashes and consequent nuisances will be eliminated from city life. They are the coal wagon, its horses and the dust that the drivers shovel on the passers-by while unloading,—a necessary nuisance at the present time.

BENSON BIDWELL,

1595 Humboldt Blvd., Chicago. Inventor of the Trolley Car.

SKETCH OF THE BIDWELL ANCESTRY.

PART VI.

Sketch of the Bidwell Ancestry.

The surname Bidwell was Biddulph in the original Saxon, and it signified War-Wolf. The Biddulphs, from remotest times, were noted for military prowess and daring. Therefore, the name was probably given the ancient founder of the family because of celebrated qualities as a warrior. The characteristics of the fighter are still marked traits of the Biddulph (or Bidwell) descendants. Nowadays, however, in America, particularly, their bravery and tenacity as contestants are evinced along the more peaceful lines of commerce, business, and invention.

The Biddulphs (or Bidwells), with other Saxons, landed on what is now English soil in the Fifth Century A. D. After the evacuation by the Roman armies, who had conquered the original Britons, the Scots invaded the country. In the wars which ensued the recently arrived Saxon emigrants displayed their accustomed valor, and soon the adventurous Scots were routed and compelled to quit the land of the Britons. But, though the Saxons had thus aided the Britons in driving back the invaders, disputes arose; and soon a state of war existed between the late allies. As a result the native Britons were driven into the mountainous country of Wales, where they later founded the Welsh nationality, leaving the Saxons in undisputed possession of what is now England proper. In the leading events, during all the years intervening and following, the Biddulphs (or Bidwells) took an active hand.

In the course of historical progress William I., commonly known in modern annals as "William the Conqueror," though a Norman Frenchman, laid claim to the throne of England and overran the Saxons, Angles, and other nationalities then inhabiting the country. And, in spite of a heroic defense by the Biddulphs and other brave warriors, he had soon established his tyrannical rule throughout the land. When he had become firmly seated in control of the kingdom, he caused all the landed estates to be surveyed and carefully registered in what was known as the "Doomsday (or 'Domesday') Book."

Among the great estates so taken particular notice of was that of the Biddulphs, which was then in possession of a young woman heiress, all the male members of the family having fallen in battle or otherwise died. Noted for his thrift and match-making qualities, King William lost little time in bringing about a marriage between this rich girl and one of his more favored warrior-nobles.

The gallant husband, however, mindful that many of the men of the family had bravely died in the late wars, volunteered to assume the name of Biddulph, thus perpetuating it as connected with the landed estate. Under his direction the Biddulph Castle, in Norfolk, was erected. And that venerable pile is in a good state of preservation to this day.

A succinct record of the Biddulph family, with the coat of arms, may be found in Burke's Peerage.

Though the name Biddulph survives in England, lately having been made more illustrious by distinguished military men, the surname borne by others of the family gradually underwent a change (as has already been implied) until it had assumed its present form of Bidwell, as known in America. The causes leading to this change are not definitely known; but there is a tradition in the family to this effect:

There was a famous mineral spring on one of the old Biddulph estates in England which was a year-round mecca for the sick and lame, its waters possessing marvelous curative properties. In the lapse of time that spring became familiarly known as "Biddulph's Well," because, on account of its shape and depth, it had the appearance more of a well than that of a spring. With the natural human propensity for saving breath by shortening language, the name of the well, in time, was abbreviated to "Bid's Well." This, later, was contracted to Bidwell. The name thus developed in after years was generally applied to the family as well as the estate. The descendants of the Biddulphs, gracefully bowing to popular choice, finally adopted the new surname in lieu of the ancient and honored form.

In America lustre has been added to the name not only by Prof. Benson Bidwell, but another of this distinguished family, John Bidwell, during his very active life, was known all over the land. He was born in Chautauqua County, N. Y., in 1819. Having acquired an academical education, he began life as a teacher, but soon entered politics. He went to California in 1841, and, with the accustomed Bidwell (or Biddulph) proclivities for fighting, there entered the Army and served through the Mexican War. During the Civil War he was a Brigadier-General. In 1864 he was elected to Congress, and in 1892 was the Prohibition candidate for the Presidency of the United States. He died April 5, 1900. He was a cousin to Prof. Benson Bidwell.

The Bidwells who migrated to America were Puritans in England, regularly attending the old Puritan meeting-house near where they lived. And they eventually came to the New World, like many others in their neighborhood, to gain religious freedom. John Bidwell, who founded the family in America, was a well-to-do farmer and miller in England. When the Puritan movement toward New England set in he traded his estates to the English King for land in the valley of the Connecticut River, near where Hartford now stands. With a number of his English neighbors he came thither in the year 1635. Being a man of strict honor as well as business acumen, he did not seize his new possessions without compensating the Indians dwelling thereon, but approached them in a friendly manner and paid them what they considered a fair price for the land. As a result of his manly attitude toward those untutored brothers of the forest, his relations with them were always of the friendliest nature. While many of the New World settlers were compelled to defend their homes and their lives with the rifle and the hunting knife, it was a matter of general comment that John Bidwell and his possessions were never molested by the savages.

Having constructed a dam across a small river about two miles from the present site of Hartford, John Bidwell there built mills for grinding meal and flour and for sawing lumber. A short time afterward he erected near the mills that old colonial-style Bidwell mansion which was a famous land-mark for about two hundred years. He later expanded his business by laying out a brick yard, a tannery, and opening a general store near the mills. These varied interests were conducted by the Bidwell descendants for more than two centuries.

The following additional facts concerning the early Bidwells of Connecticut have been gleaned from records on file in Hartford and surrounding towns:*

"John Bidwell has been thought to be the son of Richard Bidwell of Windsor, Conn.; but this theory has no evidence to support it. He appears in the Hartford records, first, as one in the list of those who received land grants and became proprietors 'by the courtesie of the town' in 1639. Those who were admitted 'by courtesie' were persons of such value to the community of first settlers that, to induce such to settle in the town, especial favors were shown to them, in according to them proprietors' rights and grants of land.

"John Bidwell's land grant in the town of Hartford itself was at first but four acres, which included his home lot and tanyard. The tanyard was on an island in the Little River. He was never a very large land owner, though well to do. His inventory shows that at his death he owned several tracts scattered about the township of Hartford.

"In the New World John Bidwell was not a farmer but a manufacturer. The records show that he was financially interested in tanyards, in grist-mills, in saw-mills, and in fulling-mills. His inventory showed about 420 pounds sterling. That may appear a small sum at this day; but then (1687) it was a large amount. This property, of course, is exclusive of what he had already given to his seven adult children during his lifetime.

"John Bidwell was freed from 'watching, warding and training' November 9, 1670. As this was generally done at the age of 60 years, he was probably born about the year 1610.

"John Bidwell and his wife Sarah were original members of the Second Church, which was organized February 12, 1670. His wife was the daughter of John Wilcocks of Hartford.

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*The principal authorities consulted in compiling this account of the early Bidwells are: Hartford, East Hartford, Glastonbury, Wethersfield and Middletown records; Hartford District Probate records; the First Book of Hartford Votes; the Colonial Records of Connecticut; the Hartford Book of Possessions; and the Connecticut Historical Society's Library and Publications.

JAMES ALLEN KIBBE.

She outlived him. As his estate was probated in 1687, he is supposed to have died early in that year, but no death record can be found.

"John Bidwell, Jr., son of John and Sarah Bidwell, was one of the extensive manufacturers of his day. He owned six saw-mills and grist-mills, three in Hartford, and one each in East Hartford, Wethersfield, and Middletown. He also was an extensive land owner. He married Sarah, daughter of Thomas Welles and his wife, Hannah, widow of John Pantry and daughter of William Tuttle. Governor Thomas Welles was this Sarah's grandfather.

"Joseph Bidwell, son of John Bidwell, Sr., settled in Glastonbury, or, as it was then called, 'Wethersfield-east-of-the-river.' He had a saw-mill there and owned about two hundred acres of land in one body, which was part of a large tract bought by Wethersfield of the Indians. The deed to the town is on record in Wethersfield. Joseph Bidwell married Mary, daughter of William Colfax of Wethersfield.

"Samuel Bidwell, son of John Bidwell, Sr., settled in Middletown, where he was an influential citizen. Several times he was the town's delegate to the General Assembly of the Colony. He married, first, Elizabeth Stowe; second, Sarah Harris; third, Abigail ——— (record is indistinct).

"Daniel Bidwell, son of John Bidwell, Sr., settled in East Hartford, which town kept Daniel in office most of the time from its organization as a parish until his death (1699-1719, record is indistinct).

"The children of John Bidwell, Sr., were without exception influential citizens and by their lives did honor to the memory of their father. And his descendants to the latest day and generation are proud to trace descent from that John Bidwell who was the first of his line on the banks of the Connecticut.'

Among the records of Hartford Town is found the last Will and Testament of John Bidwell, Sr., which is appended, the quaint and archaic spelling extant in those colonial days being preserved therein:

"I, John Bidwell of Hartford, do make this my last Will & Testament: I do give to my son John Bidwell & his heirs forever my lot in the swamp on the east side of the Connecticut River, being about two acres & a half, Lyeing between Thomas Bunce his Land and the Land of Goodman Easton; and allso I doe give and confirme unto him and his heirs forever all my Lands & buildings & appurtenances of them whatsoever, which Lye or are in the township of Hartford on the west side of the Connecticut River. Also I give unto my son Joseph Bidwell 30 pounds sterling in current pay of this Colony, 20 pounds sterling to be payd within two years after my decease and 10 pounds sterling to be payd him for the use of his children after my wife's decease. Also I give to my son Samuel Bidwell 20 pounds sterling—10 pounds sterling to be payd him two years after my decease, and 10 pounds sterling for the use of his children after my wife's decease. Also I give to each of my Two daughters, Sarah House & Hannah

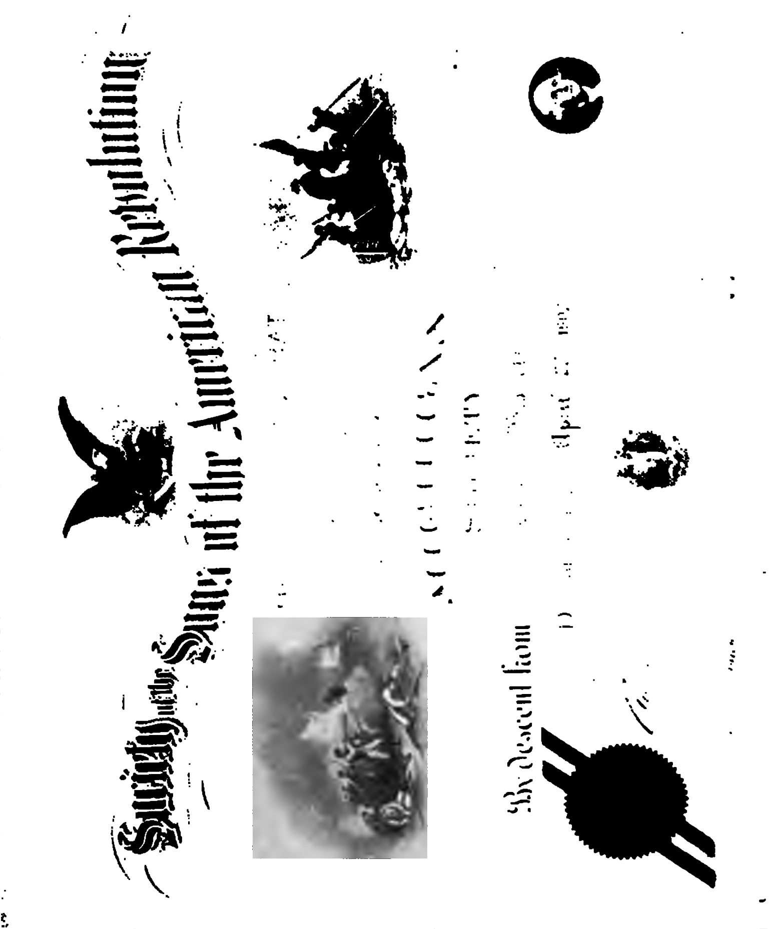
Waddams, 20 pounds sterling apiece. Also I give to my daughter Mary Meekins the one half of my upper Lot in the swamp, Lyeing south of Ozias Goodwin's Land thereby, and the other half I give to my grandson John Meekins, to be to them & their heirs forever, only my will is that my wife shall have the one halfe of that Lot during her Life and that John Meekins shall not have the halfe of that Lot unless he live with me or my wife until he be twenty years of age. If myself or wife do Live soe long. Also my will is that my wife Sarah Bidwell shall have all my household goods and stuffe to be at her dispose forever; & I do moreover give her the one halfe part of all my estate whatsoever that is not before disposed of, both Lands, houseing, Chattells, Cattell, or any other thing whatever it be, to be For her proper use, during her natural Life & no Longer; & if it shall seem good to my wife at any time to leave that part of the houseing & Lands & Cattell which I have given her during her Life as before unto my son Daniel Bidwell, Then I doe give her 8 pounds sterling by the year out of it, the Lands, houseing & Cattell to be payd her in current pay of the Colony by my son Daniel Bidwell or who soever enjoyeth the sayd Lands, houses, Chattells & Cattell. Also I do give the other halfe of my whole estate not before disposed of unto my sayd son Daniel Bidwell & his heirs & assigns forever. Also I doe in like manner give unto him after the decease of my wife the other halfe of my estate which was before given my wife for and during her natural life. I make my wife Sarah Bidwell and my son Daniel Bidwell executors and Mr. John Crow to be Overseer.

JOHN BIDWELL (L. S.)

"Witness: William Pitkin, Joseph Olmsted.
"Date of Will, 10 February, 1680.
"Probated, 1 September, 1687.
"John Bidwell Inventory, taken 4 June, 1687, amounts to 419 pounds sterling, 10 shillings, 6 pence."

Though the original John Bidwell thus divided his property by will, it appears that his son John instituted the English practice of entail; and in subsequent years the Bidwell estate was increased to several hundred acres of land and other large holdings. This tract, with the mills and other business, passed from one generation to another through the eldest son, following the English custom, though all the other legal American heirs shared in the profits accruing. This method was continued until the year 1854, when five Bidwell brothers, departing from the old custom, deeded the property to a cousin of Prof. Benson Bidwell. This young man proved to be a poor manager of the estate, placed a mortgage upon it, and eventually lost it through foreclosure by the mortgagee. Retribution for thriftlessness soon overtook him, however. For, it is reluctantly explained, he so keenly felt the disgrace of having lost from the family the old homestead for two hundred and thirty-six years that he took his own life.

True to the traditions and manly character of the family, the American Bidwells took a very active hand in the War of the Revolution. No less than twenty men (all Bidwells) of the relationship were in the field at one period of the struggle, battling for that liberty which the first John Bidwell had come so far to gain and which had become so dear to every Bidwell heart in the hundred and forty years before the Revolution.



Society of the Sons of the American Revolution

By descent from

Zebulon Bidwell, great-grandfather of Prof. Benson Bidwell, was Captain of a Hartford company. After valiantly serving his country in the field for more than two years, he was fatally wounded at the Battle of Stillwater, having a leg shot off by a cannon ball and expiring the following day. Before he gave up his life, however, he was proudly conscious that he had participated in one of the momentous battles and victories of the Revolution. With the eye and mind of the true military prophet, he foresaw Burgoyne's surrender, as a result of this defeat by General Schuyler's forces, which capitulation was effected at Saratoga just ten days after the battle. This campaign, resulting in the capture of nearly six thousand of the flower of the British Army in America, judged by its results, easily takes rank as one of the great battles of the world. For its consequences were fourfold: It saved the State of New York. It destroyed the well-laid British plan for the war. It induced the King of England to offer the Colonists peace with representation in Parliament, or anything else they wanted short of complete independence. It secured for the struggling Colonists the powerful aid of France.

The Revolutionary War being over, and the fruits of peace having been enjoyed for a year or two, in 1796 a part of the Bidwell family moved into the wilderness of Western New York, which Captain Zebulon Bidwell had aided with his life in wresting from the hold of the British. Here, in what was afterwards laid out as Livingston County, the Bidwells bought from the Indians a large tract of land, paying for it with Revolutionary scrip, which passed current even among the red warriors at that time. The pioneers prospered in Livingston County and the Bidwells dwelt there more than forty years, or until about 1836.

There, in the town of Avon, September 2, 1835, Benson Bidwell, the now distinguished inventor, made his advent into this life. His early experiences there and in other parts of the West, carefully collated from his diary and other sources, are set forth in another part of this book.

Prof. Bidwell's ancestral line extends directly back to the original John Bidwell, Sr., the connection running down as follows:

John Bidwell, Sr., who migrated to America and settled at Hartford, Conn.

John Bidwell II., who also lived at Hartford and became a large land owner in the city and near it.

John Bidwell III., who succeeded to the large estates as the eldest son.

John Bidwell IV., who also fell heir to the ancestral possessions.

Zebulon Bidwell. Captain in the War of the Revolution, who led a company from Hartford and fell, mortally wounded, at the Battle of Stillwater.

Moses Bidwell, who inherited the estates from his father Zebulon and continued to conduct the various enterprises of the Bidwell family in and around Hartford.

Austin Burnham Bidwell, who migrated westward to the frontier of New York State, and settled where Benson Bidwell, subject of this book, was born.

In the numerous records consulted while tracing Prof. Bidwell's ancestry the name is variously spelled, occurring as "Bidoll" (much like the ancient spelling). "Beddall" (an easy corruption of Bidoll), "Biddell" (much like the later name as used in England), "Bidwill" (thought to have been originally "Bidwell"), and "Bidwell," as now spelled, and which appears to be nearest to the correct form—aside from the original "Biddulph," the ancient Saxon form.

THE RAILWAY TELEPHONE SYSTEM.

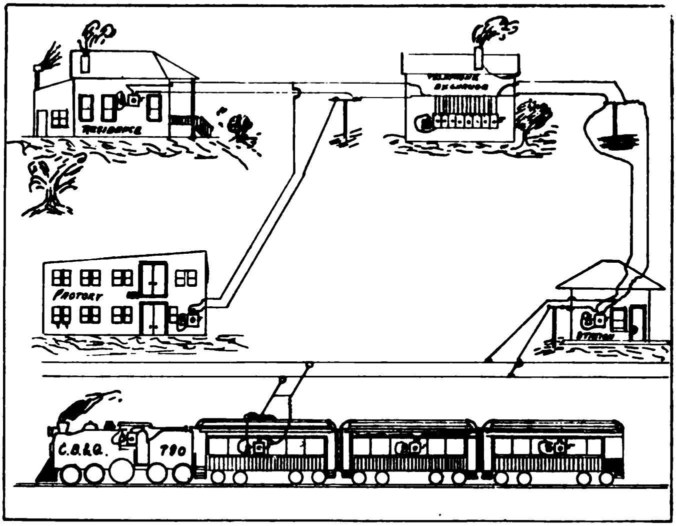
PART VII.

The Railway Telephone System.

TELEPHONING FROM MOVING TRAINS.

(Paper Read by Mr. Bidwell Before the Annual Meeting of Railway Telegraph Superintendents, Chicago, June 19, 1902.)

When the convention met on the second day of the session, President Jacoby announced: The first in order this morning is miscellaneous business; and if there is no other miscellaneous business at this time, we will have Mr. Bidwell's paper on "Telephoning From Moving Trains."



PLAN FOR RAILWAY TELEPHONE.

Mr. Bidwell: I am very glad to meet so many of you, gentlemen, superintendents of railway telegraph. I commenced my career in electricity when I was a boy in a telegraph office. I want to bespeak your forbearance, as you know that inventors are more or less cranks, if I present something that does not exactly meet your approval, but you know someone must lead the way. As I have been in other branches of electricity, so I am in the application of it to telephoning from moving trains,—in the lead. I would remark that not being able at the present time to have a photograph as I wanted of the system, a short time ago I took a pen and made a pen and ink sketch of the car telephone system as it will be within a few years, and have had the sketch photographed. And gentleman who would like to have one as a souvenir of this convention, and as showing what is coming, I would be glad to present with one at any time. The model will be in the exhibit room in a short time, but has been delayed en route. Prefatory further to my remarks in the paper, I would state that in correspondence with Mr. Chenery of St. Louis, he suggested that I might give you some reminiscences of Prof. Morse, as I saw him when a boy; therefore, I will commence with those, and finish by taking up the subject of telephoning from moving trains.

REMINISCENCES OF PROF. MORSE.

The art of telegraphing mechanically had been experimented upon perhaps a hundred and fifty years before the year 1835 by the philosophers of Europe, but none of their experiments were of any commercial value up to the time of Prof. Morse, who in that year used the electric current for the purpose of printing his dots and dashes, or what is known as the Morse Alphabet.

Dr. Prime, the author of the life of Morse, says: "The grandeur of this wonderful alphabet of dots, lines and spaces has not been fully realized." After he had perfected his system so completely that there has been no accepted change in the principle of telegraphing up to the present time, and he was ready to introduce it commercially, he, in the year 1842, started out to try and interest the public in the subject by delivering lectures in the towns and cities of the country.

In his travels he came to Adrian, Michigan, where my father then resided; there he put up a wire about forty feet in length in the town hall, having a telegraph instrument at each end, and invited the public to come in and view his new system of conveying intelligence or language to a distance.

I do not know whether his lecture was free or not, being a barefooted boy of between seven or eight years of age. I remember that it did not cost me anything to attend his "show," as the people called it.

In the evening of his exhibition there were perhaps twenty-five or thirty men in the room, and when the Professor was ready he made them a speech, saying he had invented a new way for conveying language or messages through a wire to long distances, and I remember as well as though it were yesterday the circumstances that occurred that evening.

A few years before this Adrian was settled by a colony of wide-a-wake, down East Yankees, whose business men's occupation outside of selling merchandise was playing jokes upon each other and playing old-fashioned baseball between customers. To illustrate the people that Professor Morse had to deal with that evening, I will relate an incident that occurred.

One day a hardware merchant came out of his store having in his hand a little tin box with a handle to it and what looked like a whistle projecting from one side. Passers-by began to congregate around him, looking and asking what it was. He told them that he had invented an improved whistle for sounding alarms, that he was going to send it to Washington and obtain a patent.

Within a few moments one of the more inquisitive ones took it and thought he would try the sound of the whistle, and as he blew on it his face and head were covered with a quantity of dry flour. Immediately the crowd laughed and shouted at the fun and at the man who had had the joke played upon him.

Therefore, when Professor Morse explained to them that he proposed to send language through that wire, they looked upon it as one of their own jokes the stranger was trying to play on them, and no one would go to him and whisper in his ear a message which he said they could go to his assistant at the other end of the wire and receive, but each one stood around and nudged the other, saying, "You go;" and the other would say, "You go."

It was some time before anyone had the courage to step up and have the joke played upon him, as he supposed, but after the first one had sent a message and received from the assistant the words which he had sent and the others had sent messages all of the evening, and they were laughing and nudging each other and saying that while they could not understand the game, they were satisfied that Professor Morse was playing some sort of a huge joke upon their credulity.

After Professor Morse went away they talked for weeks about "that crazy crank" who had tried to make them believe he could send words through a wire. They said if the wire were hollow he might do it, but he could not fool them and make them believe he could send words through a solid wire. They said that through some sleight-of-hand arrangement he had conveyed the messages to his assistant without their knowledge.

We all know the story of the appropriation by Congress of thirty thousand dollars to build the first telegraph line from Washington to Baltimore.

In 1847 my father had moved to Toledo, Ohio, and one day I saw men erecting poles on the street and stringing wires upon them. I asked them what they were doing. They said they were building a telegraph line from Cleveland to Toledo.

I remembered the circumstances of seeing Professor Morse's demonstration in Adrian, and I went immediately and secured a position as messenger boy, and there I had my first lessons in telegraphing.

TELEPHONING FROM MOVING TRAINS.

After accepting the invitation of Mr. Chenery to read a paper upon the subject of telephoning from trains of cars, he sent me a copy of your last year's session report, which I read with much interest and learned from it that the use of the telephone for running trains had been discussed in a paper by Mr. F. P. Valentine, and then generally by many of your members.

I find that the paper and its discussion occupied forty-three pages, while the other subjects and their discussion required but from five to nineteen pages. Therefore, I am encouraged to enter upon the subject of telephoning from cars with much greater freedom than otherwise, feeling that I should not put you to sleep on a dry or unknown subject, for the subject matter is a live one.

As Mr. Valentine's paper so perfectly expresses my ideas in part, I shall quote from him as well as from the other gentlemen who entered into the discussion.

I quote, "that this development has been so long delayed in comparison with the rapid development of the public telephone service is largly due to the fact that the possibilities of economy and expedition of business have not been appreciated by either the telephone or railroad companies. The development which has taken place in the time named has been such as to arouse an interest that would indicate unlimited possibilities in the way of development within the next few years."

I could not possibly use stronger language than Mr. Valentine to enforce upon your attention the "unlimited possibilities" of the economy and the saving of life which will come by the use of the Bidwell Car Telephone System upon your trains.

I quote again: "If a wrecking car is equipped with a compact telephone set, as soon as the car arrives at the scene of the wreck, instant communication may be established with the dispatchers and division headquarters by means of these division lines. Several instances have occurred recently demonstrating the value of this emergency service, where a telephone was attached to a telegraph pole within a few feet of the wreck, connected with the wires running to the switchboard at division headquarters, allowing the division superintendent, who was on the ground before the wrecking car arrived, to keep in touch with the dispatchers and the towers on each side of the wreck, and, as soon as one track was clear, permitting the movement of a number of delayed passenger trains with little loss of time."

We could almost say the words of that quotation are prophetic of the coming train 'phone system, whereby all collisions will be prevented, and if any other kind of a wreck occurred you will have the 'phones in your cars ready for instant use to call for assistance; where the delay of traffic even for one hour means a loss of thousands of dollars, you gentlemen can readily appreciate the value of instant communication.

"The fact that a train dispatcher sitting at his desk is enabled to communicate instantly with his engineers and his conductors effects great economy in business and excels in value the use of the telegraph or mail train."

The above is a quotation from Mr. Valentine, only I have substituted train dispatcher, engineer and conductor for general officers and subordinates.

Still again, "It is astonishing how much business can be transacted over one pair of wires."

Again I quote: "It is possible with experienced men to build and maintain telephone circuits on the right of way of the railway company. Induction from high tension currents will give more or less trouble, but this can usually be overcome by careful transposition of the currents."

I have made a study of the subject of transposing for our telephone system, and have invented a very simple transposer which will eliminate that trouble.

My time and study has been for the last twenty-five years on the subject of supplying electricity to the propulsion, lighting and heating of cars, and having run the first trolley car, as now used, at Philadelphia in 1884, at the Electrical Exposition, I, at that time or before, had realized the fact that I could telephone from cars just as readily as I could run them with electricity. Perhaps these ideas came into my mind more readily from the fact that originally my entire thought and study was to replace the locomotive with the electric motor, and therefore I studied out the plan of telephoning from trains of cars or telegraphing from trains by the same system of yielding contacts that I use for the trolley car.

And coming before you today with what is known as the Bidwell Car Telephone System, I am fully satisfied that we are far beyond the experimental stage in successfully telephoning from trains of cars regardless of the speed; but on account of chronic sickness I have been delayed in bringing this invention before the public as soon as I would have liked. I applied for my first patent upon the system August 14, 1884. Some six or eight years ago I visited the managers of several of the Chicago steam railroads upon this subject and was referred by them to the superintendents of their telegraph systems. I called upon three or four of the gentlemen; they received me very kindly and listened to my explanations of the way I proposed to telephone from moving trains of cars, and after they had heard my story they said that while the system might save accidents by collisions, they did not at that time see their way clear to test it. Therefore, I have been unable to interest any steam railroad men to give this a thorough test up to the present time.

Last January we succeeded in inducing the President of the trolley car system in Muskegon, Michigan, to allow us to use a short section of his railroad to demonstrate the feasibility of talking from moving cars. We put up a temporary system very crudely with telephones in two cars, and when we were ready and the two cars were running the system worked with the greatest success. We could hear with just as much distinctness as from any ordinary telephone in an office.

We then put up a line in Grand Rapids, Michigan, about one half mile in length, whereby we were able to further demonstrate the success of telephoning from moving cars and talking through the central exchange to towns forty miles away, and are preparing as rapidly as possible to equip long lines of road with the system whereby the train dispatchers can always know where every train on the line is either day or night, and each engineer can talk with the train he is to meet and pass when thirty miles away and can know if it is on the siding before he arrives.

We have two different plans for our Car Telephone System—one for overhead wires, and the other for the electric conductors, placed upon the ties of the road and insulated therefrom. We realize that there is a great deal of prejudice among steam railway men to having poles or lines near or over their tracks, but I hope you will bear in mind that all great advances in railroading, as in every other line of business, first meets the objections of those that are only acquainted with the old way of doing things, and they think because the new way of doing is different from the old that it will be dangerous, or objectionable, for other reasons; or it meets with legal enactments that forbid its use.

I well recollect that in 1884 the Council in Philadelphia had put all telegraph and telephone wires under ground and forbade the future erection of them in the streets, but at this time the streets are full of trolley wires. The lesson we learn from this is that all laws, state or national, that stand in the way of our tremendous national progress in invention are swept aside or repealed.

We must remember that, notwithstanding the objections that have been made in all departments of mechanical business, the progress has been sure, steady and persistent. The American inventor will keep to the front though the general public may call him a fool and a crank. Yet he "gets there."

We feel that we can remove all objections that are now held by the superintendents of telegraph systems, and by all officials of the roads, to have wires alongside of their tracks either on the surface or overhead, if they will enter upon a reasonable investigation of the subject.

We propose to put the overhead telephone wires about six feet from and twenty feet above the side of the tracks, whereby we can make a contact with the wires by the trolley pole and wheel, the same as is done now with my trolley railway system as you see it running in all parts of the United States. While the objection can be raised that a windstorm may blow the poles and the wires down we do not see that it would be any greater objection that to the present system of telegraph wires which line all the railway tracks; many of the poles are so heavily loaded by wires that they are sometimes blown down by wind or broken off by sleet storms.

On the other hand our poles would have upon them but two wires for telephones, or to be used at the same time for telegraph purposes, and there would be little, if any, danger of their blowing down with the storms that prostrate other poles and wires.

My other plan of telephoning from moving trains is from the electric conductors laid upon the ties upon which we have a yielding trolley wheel contact the same as overhead, and we have perfected the system whereby we can pass other roads and crossroads, and highways and switches, which it would be necessary to do in order to have the success we know it will be.

It is amusing to recall the events of eighteen years ago this coming September, when the speaker ran his first trolley car at the Philadelphia Electrical Exposition, and to recall the criticisms of men who now say any one can do it, but then said a car could not be run, lighted and heated by one current, and who called the polarity or reversing switch a toy which I then first used in the combination which goes to make up the trolley car now in universal use in Europe, India, China, Japan, and the world over, without any change from that to become the historical car of September, 1884. That car was as much like the present trolley cars as the photo of a handsome lady is like herself.

It is my desire that sufficient interest shall be taken in this subject by you gentlemen that a committee shall be appointed to enter into an exhaustive investigation, and that some one road shall be requested to give our Car Telephone System a trial, and thereby demonstrate that, by use of this telephone system, the saving of life and property in a year, taking as an index the losses by collisions between trains in the last twelve months, would have paid for the installation of thirty thousand miles of the Bidwell Car Telephone System.

Taking our estimates from the telegrams in the newspapers, there has been a loss of two hundred and thirteen lives and a half million dollars in property by these collisions. On that basis of loss, if the collisions continue as frequently as they have in that time, two years of such losses will equip every steam railroad in the United States with our Car Telephone System, whereby it would be impossible to have a collision occur unless the engineer, the firemen and the conductor were all drunk or all asleep or all dead on each train.

To bring my meaning near home, we will say that the Fast Mail No. 20 on the Burlington is ordered to meet and to pass train No. 30 at Daisy Station. The hour is midnight, stormy, dark—as unlighted as Hades. No. 20 is splitting the darkness at sixty miles an hour. Daisy Station switch is twenty miles away.

Suddenly the chug and pound of the drivers is broken by the tinkling of the telephone bell. The engineer, without removing his eyes from the headlight-broken gloom, through which he is plunging, lays his ear against the receiver and hears these ominous words: "No. 30 delayed; give us three minutes." A move of his hand partly closes the throttle and slows the train.

Soon another tinkle, and the engineer, pressing his ear to the receiver, hears these welcome words: "No. 30 on the switch." The throttle is thrown wide open, and No. 20 again plunges through the gloom of the midnight hour. On No. 20 are a bride and groom and a bridal party, hilarious, happy, joy uncontrolled, the fleeting hours on the fleeting train. To them no fear, no sorrow, no dark cloud hovers over their bright future, their fondest hopes. Alas for them! There was only the tinkling of a tiny bell between their happiness and a holocaust of death and flames of fire. A grinding of crushed cars, a few shrieks of agony, and all those happy voices are stilled forever in a tragic death. So many beautiful women and brave men have been the unfortunate actors in such horrible collisions that the above description seems a telegram of what had occurred but an hour before.

You are the men of the hour who stand in the forefront of the battle for this added safety on your trains. Shall a thousand men, women and children uselessly die, five thousand be made cripples, and thirty thousand mourn in the coming five years, or will you act promptly in the cause of human safety and stay this awful slaughter of innocent men, women and children who ride on your trains and whose lives are largely in your keeping?

In this humanitarian age when associations are formed and laws enacted for the protection of animals, of birds and of fishes from the abuse and ruthless destruction by man, we owe it to our fellow men that if there is any way possible whereby we can add to the security of their lives and their limbs while traveling on railway trains, it is our duty to do so. In order to do this, it is our duty to lay aside our doubts and satisfy ourselves by a definite application of the system to some steam railway whereby we can prove or disprove the claims of this invention.

Gentlemen, you all know better than myself that in returning to your homes you do not know if you will walk from the cars or be carried out in a coffin, or whether you will be killed in a collision and burned up, or if you will be crippled for life. You are the men who are responsible, for these matters are referred to you,—as I have learned by experience. These facts are so prominent in the papers and such accidents are occurring so often that it seems thoughtful minds ought to grasp the subject to the protection of human life and throw about it that same care, and far more than we do to animal or bird or fish life. It is not only the victims that are killed or maimed, but we must remember that every accident that occurs upon the railroad trains carries mourning into families and to relatives and deprivation and sorrow from which many of the survivors never recover.

There is no class of responsible men who are more generous and large-hearted than railway officials, of whom you are not an exception.

Mr. Charles L. Jones, for many years superintendent of the Illinois Central Railway Telegraph System, no doubt known to many of you, was a friend of mine; large-hearted and generous to a fault. He has gone to his final reward.

Individually, in the absorbing cares of your positions, you have had no time to study this question in the past; the proper method to handle it is collectively by a committee, thereby no one man assumes a responsibility for which he might feel some delicacy.

Do not think I am offering criticism on your past administration of the telegraph departments of our great railway systems, but I wish to ask you in all sincerity if you will not become subject to criticism in the future if you do not investigate and test our claim that the Bidwell Car Telephone System is a preventive of collisions between trains? Are you not in this sense your brother's keeper? Are not many of the lives of your fellow men in your hands?

It is the sincere desire of the speaker that you will all of you return home in safety instead of being carried home in a coffin or an ambulance, and that your families will not have to mourn your loss because of an accident upon the railways, which, if it is a collision between two trains, could undoubtedly have been avoided if the trains and the railway had been equipped with a Bidwell Car Telephone System.

Gentlemen, I do not wish to weary you with the details of what a perfect railway system will be, yet I will give you a glimpse of that happy time when you can enter a train for the Pacific coast with an assured certainty that you will arrive without a collision or any other automatic electrically preventable accident.

The conditions of such certainty will consist in the track rails having automatic alarms by which if a rail breaks or is maliciously displaced, those alarms will ring in the stations each way.

If a switch is displaced, accidentally or otherwise, the automatic alarms will sound. If a bridge or culvert is swept away the same danger signals will ring.

If two trains are on one block, alarms will ring in each train, and not stop until one of them has left the section; these trains may be following or meeting each other.

In the month of March I called upon the manager of one of your railways and fully explained the Bidwell Car Telephone System to him. After a general talk on the subject, he said:

"It's a good thing, for this reason—any employe of the railway can talk into a telephone, but it requires an expert to telegraph."

He referred me to his superintendent of telegraphs, where my communication remains, buried, to this time. But we hope it may be resurrected some time in the future.

Within a few years the business men will demand a 'phone system on your trains, by which, en route, they can call up any city or station and transact their business without loss of time.

A business man coming on from New York to Chicago to attend to some special and important business, but being desirous of seeing Mr. Thompson of Detroit, 'phones from the train to Thompson to meet him at the depot at 9 a. m. Thompson is there; they transact their business and he arrives in Chicago on time.

That is but one instance of from ten to twenty appointments he can make on the trip from which the railways, if they wish, will derive a large revenue.

This commercial line will be independent of the railway operative system, and will not be connected with the line used by the train dispatchers.

(The address proper being ended, and discussion taken up, Mr. Bidwell answered some objections made.)

Mr. Bidwell: May I be allowed to explain for a moment? In my paper I only entered into an outline. The model, which I will show downstairs, will give you a better idea of the invention. You will see that I have a strong trolley hanger, and as the trolley comes along the wire raises the same as it does between supports, whereby we expect to eliminate entirely the jumping of the wheel. We also make the wheel deeper some three inches for that purpose. We cannot tell without a test, but we believe we have worked out all those problems so fully that they will give little trouble. I hope there will be further criticism.

(Responding to a query by President Jacoby relative to whether the system was then in practical use anywhere, and, if not, asking the reason, Mr. Bidwell explained.)

Mr. Bidwell: No, sir. I have been an invalid for the last thirty years. That is why I have made all these inventions. I could not do anything else. I applied for my first patent and the application lay in the Patent Office until 1896, when it was finally issued. Since then I have been a helpless invalid, until this summer. I have not been out at all. And that has kept this matter back, much to my regret. I am now ready to try and press it.

(Answering a question by Mr. Rhoads relative to the position of the telephone wire on which the trolley would run, Mr. Bidwell further stated.)

Mr. Bidwell: It is a matter of application. I should prefer to put it over the tracks. But my original idea was a side-bearing trolley. The model I have here is side-bearing. It will run just as well overhead (like street car trolley wires). If there is objection to the side-bearing, it can be placed overhead successfully.

(The discussion being closed, President Jacoby appointed a committee of three to take up the paper and report on Mr. Bidwell's invention and propositions.)

PROVES SUCCESS AT GRAND RAPIDS.

From Grand Rapids *Herald,* March 7, 1902.

Benson Bidwell and Charles F. Bidwell yesterday afternoon, through the courtesy of the Grand Rapids Street Railway Company and the co-operation of the Citizens' Telephone Company, and in the presence of a large number of invited guests, successfully demonstrated the commercial and practical feasibility of telephoning from a moving electric car without regard to the speed attained or the noise incident to the movement of the car.

The demonstration marks an epoch in the application of the telephone in connection with both electric and steam roads, and in a measure is but another triumph of American ingenuity.

The device, simple though it is, is strikingly suggestive of the fact that the greatest mechanical innovations and splendid results are not always reached through complex details and intricate mechanism. In fact, Mr. Bidwell's splendid achievement consists more in the idea that it could be done than in forming together the necessary mechanical combination.

An experiment in a limited way, but without any special preparation, was made on the Muskegon railway by Charles F. Bidwell, a son of the inventor, some few weeks ago, but they lacked sufficient opportunity at that time to apply it to a thorough test, and it remained until yesterday afternoon for the final and complete test to be made.

The successful demonstration by Mr. Bidwell yesterday afternoon has, beyond a reasonable doubt, solved the great problem of telephoning as well as telegraphing from both electric and steam roads. Its application, both as a necessity in the operation of the road and the benefit of the general public, appears unquestioned. It not only affords exceeding benefit to the traveling public, but its broader and more urgent field lies in the operation of the road. How many lives in the past might have been saved had the chief operator been in a position to dictate but a single word to a flying train as it surged on to destruction.

Another prominent feature of Mr. Bidwell's system, as explained by that interesting gentleman, lies in the fact that the same telephone wires can be used on a steam road for all telegraph purposes required of two telegraph wires by the railroad company, even to having the telegraph instruments in the cars, and the same operator who has charge of the telephoning can do the telegraphing.

PRACTICAL DEMONSTRATION AT MUSKEGON.

From Muskegon (Mich.) *Morning News,* January 10, 1902.

An invention which will be remembered in years to come as one of the most notable of the age was given a practical and most eminently successful demonstration at Muskegon Heights yesterday morning. As a result of the test it is now possible for a person who is a passenger on an electric or a railroad train running at full speed to step to a 'phone in the car and call up his home many miles away or talk to a friend on another train on the same line which is speeding along in an opposite direction. If he wishes to talk confidentially and personally with a relative or friend who lives a few stations ahead of the train on which he is a passenger he can call him up and the person will be ready to grasp his hand when the station is reached. If he has a desire for an especially fine spread at the hotel where he is going to stop when his destination is reached, or wants extra accommodations, he can call up the hostelry and everything he has asked for will be in readiness when he arrives.

The man who is the author of this wonderful invention which will increase the comfort and pleasure of the travelers of the present and the future is Benson Bidwell of Chicago. He has been working on the telephone device for many months past and but very recently was granted full patents by the government.

The work of installing the system on the Muskegon Heights spur line was accomplished in a few hours. Two motor cars were detailed for the demonstration and in each one a 'phone was placed. Mr. Bidwell, Train Dispatcher Percy M. Pett, Superintendent Richmond of the Traction company and the motormen and conductors of the two cars were present.

When everything was in readiness Superintendent Richmond stepped to the telephone in one of the cars and Mr. Bidwell to the one in the other car, The bell tinkled and the two men began to converse in an ordinary tone of voice. While they were still talking one of the cars was started up and while going at full speed away from the other the conversation was continued. Then the other motor was set in motion and no change was noticeable in the distinctness of the voices.

The various members of the party were given a chance to try the experiment for themselves. After maneuvering for some time, during which nothing but the most satisfactory results were obtained, the tests were declared a great success.

GREATEST VALUE ON STEAM RAILWAYS.

From the Toledo *Times,* March 16, 1902.

The Bidwell telephone device has been successfully tested in Muskegon and Grand Rapids, Mich., the electric roads and telephone companies of those cities having been the first to offer facilities for the desired test. In Grand Rapids two trolley cars were equipped with the apparatus and the Bidwells and those to whom they show their apparatus are in conversation daily from a moving car to another moving car similarly equipped and with the city and "long distance" subscribers of the Grand Rapids Citizens Telephone Company. The connection is made through the central office, and each car has its number on the switchboard just as any other subscriber.

The great practical value of the invention, however, does not consist solely in talking from moving urban electric cars. It will be much more valuable on interurbans and probably most valuable of all to steam roads. All that will be necessary in the way of additional equipment, Mr. Bidwell says, is an extra set of wires along the side of the track and the establishment of such central stations as may be necessary. With the equipment in use the possibility of wrecks from mistaken orders, or from any cause save the defects of mechanical construction of the train or track will be reduced to a minimum.

"If our telephone had been in use on the Wabash Railroad on Thanksgiving Eve," Mr. Bidwell said, "that terrible wreck at Seneca would not have occurred. The conductor would have called up the dispatcher, after the train had left Montpelier, and would have verified his orders. He would then have been sure where he was to meet that other train, which could also have been notified of the impending accident."

There is also another feature of the system that, while not of as great public value, is not to be overlooked. A business man, leaving Toledo, for instance, for Chicago, finds out that there is some important thing he has forgotten or something that he should have told his assistants. All that he has to do is to telephone his office from the moving train.

DANGER OF COLLISIONS NEARLY NULLIFIED.

From Grand Rapids *Evening Press,* March 13, 1902.

As told in the *Press* at the time, experiments were conducted at Muskegon last week to test the practicability of a new telephone system designed to be used on moving electric cars or railroad trains as a means of communication with each other and with stations along the line.

The working trials of the apparatus are said to have been entirely satisfactory to the inventor, Benson Bidwell. Conversations were carried on easily and clearly between cars running in opposite directions, undisturbed by the rumble and buzzing usually incident to electrical transit. An extra wire was strung parallel to the power wire and the principle of the trolley was utilized in completing the circuit.

Many efforts to establish electrical communication between moving trains or between trains and stations have been made in the past, with more or less successful results. Usually the experimenters have used the rails as their medium. The Bidwell system is more simple in theory, and perhaps its very simplicity will cause it to win out in the end.

The investigation and study being conducted along this line is apt to prove both interesting and of great value to the public. It is bound in time, if inventors are persistent, to result in the discovery of some method of reliable and convenient communication by which trainmen can keep in touch with each other and with headquarters.

When this is accomplished the danger of collisions will be lessened if not completely nullified.

TALKED WHILE GOING AT FULL SPEED.

From Grand Rapids *Evening Press,* January 10, 1902.

MUSKEGON, MICH., January 9.—C. F. Bidwell, of Toledo has given in this city a successful demonstration of a moving telephone apparatus, invented by his father, Benson Bidwell. Permission was obtained from the local electric line to use a spur of its track at Muskegon Heights. Persons in two cars which were going in opposite directions at full speed talked together as naturally as if they were using 'phones in two private houses.

A wire is run parallel with the regular overhead trolley wire. To the trolley pole of the car is attached another short pole, which forms a connection with the other parallel wire by means of a flanged wheel. In this manner a closed circuit is obtained. Two ordinary telephone wires are run from each trolley pole to the phones in the car.

In the demonstration here the 500 volts used to operate the electric line was reduced to ordinary telephone force by a special invention of the originator of the system.

The telephone system can also be used on steam roads by stringing a wire overhead and using the rails for a ground circuit.

Full patents have been granted and a stock company will be immediately formed for the manufacture of the system.

BIDWELL SHOWED THE WAY.

As an example of the practical possibilities of the railway telephone system, the following, clipped from the Chicago *Examiner* of October 6, 1907, is interesting. But the writer of this article, evidently, was not well informed of what had been already accomplished by Prof. Bidwell years before the Union Pacific undertook to equip its line with the railway telephone. And it is also evident that he did not know that the Bidwell experiments had acomplished and demonstrated the very things which the officials of the Union Pacific "hope" to bring about by the later "perfecting" of their system. But the *Examiner* is habitually unreliable.

CALL UP FRIENDS WHILE ON CARS.

UNION PACIFIC INSTALLS 'PHONES ON ITS "OVERLAND LIMITED" GOING EACH WAY.

Officials of the Union Pacific Railroad at Chicago have just received inquiries from several English roads for details of their telephone service from their best trains. The officials of the English roads were so favorably impressed by reports made to them by British travelers in America, upon their return home, of the great benefits of the train telephone that they are already considering placing the system in operation upon their own roads.

The Union Pacific train telephone system has been in operation for some time—long enough to have been thoroughly tested. In time the railroad hopes to have the apparatus still further perfected so as to enable persons to telephone from the train while it is in motion.

The 'phone system is now installed on trains No. 1 and No. 2, known as the "Overland Limited," which run straight through form Chicago to San Francisco. The phones are so arranged that immediately after the train pulls into one of the larger stations—Omaha, Denver, Salt Lake City, Chicago or San Francisco—connection is made with the telephone system of that city.

The receiver is placed on a table in one end of the parlor car. The wires from the car are attached to wires leading to the trunk line of the station 'phone system, and this in turn gives the travelers connection with any point in the city reached by telephone. Thus it is not necessary to leave the car in order to have a chat with friends, arrange for hotel accommodations, baggage, etc.

Whether the experiments now being conducted to enable telephoning from the train while in motion will prove successful is a question.

Railroad officials, in discussing the matter, admit that nothing successful has yet been done, but they are hopeful. They refer to the wireless telegraph and to the most recent wonder of the electrical world—the transmission of electrical power without the aid of wires, the discovery of a European scientist which is now almost the sole topic of discussion in the scientific world.

PRESS COMMENT ON ELECTRIC CAR.

PART VIII.

Press Comment on the Electric Car.

CURRENT TAKEN OFF BY SMALL WHEEL.

From *Electrical Era,* September 25, 1884.

The Bidwell electric railway at the Electrical Exhibition at Philadelphia is now in good working order. The car is propelled by electricity, and the same power also lights the incandescent lamps in the car and the arc lights along the railroad. The electric current is taken from a dynamo which can be run by either steam or water power, and conveyed to the tubes which carry the current along the railroad.

A small wheel runs in the tubes and takes the current to the motor in the car. It is a very simple process and is a grand success.

The model on exhibition is designed for an elevated railroad, and is just the thing that Philadelphia needs very badly. The patents for the system are controlled by Benson Bidwell.

That electricity as a motor for street cars or on steam roads is destined to be employed, the ideas, as centered in the Bidwell electric railway, are attracting the attention of the railroad officials from all sections, and is now one of the striking features of our Electrical Exhibition.

BIDWELL'S FIRST CARS AT BOSTON.

From Boston *Post,* December 13, 1884.

The American electrical exhibition shows considerable improvement, and the past few days have been busy ones at the Mechanics' building, but some little time is yet needed to bring the exhibition into satisfactory shape.

A very interesting exhibit, and one which is now in perfect working order, is the Bidwell electric system.

The Bidwell electric railway, which is located in the gallery, will be one of the most interesting of all the features at the fair to the general public. The tracks make a complete circuit of the gallery, and few people fail to take a ride upon the company's cars. The company has a train of cars, which are of beautiful workmanship and richly upholstered. It probably will be a surprise to some to know that the electrical current which supplies the power is obtained from the Weston Company's works, on Stanhope street, and brought to the building by an overhead electric light wire. This system has proven the truth of the theory that the electric current loses but little of its power in passing through a motor, and it not only propels the cars, lights and heats them as well, but it lights the streets through which it passes, and lights and heats houses as well, and also provides power for manufacturing purposes. This is illustrated by the exhibit at the fair.

The same current that propels the cars, lights twenty incandescent lamps in the cars, provides power for twelve Weston 125 candle power incandescent lamps in the main hall, heats the cars, runs a lathe, and provides heat for vulcanizing rubber. These diversified uses to which the current of electricity is put proves the fact that one current can be used for more than one purpose at the same time.

This system purposes to furnish power and cars for either surface or elevated roads. On surface roads the conductors are placed in a viaduct between the track. This is covered over with a surface plate, in which a slot is cut its entire length, through which the electric contact is made between the motor and car and the conductor in the viaduct.

The conductors are suspended under the surface plate, and an arm drops from the bottom of the car into the slot and by an ingenious arrangement of wheels and springs an even pressure is maintained on the conductors. Through this arm the current is conveyed to the motor in the car. A novel arrangement is attached to the car for the purpose of sweeping out any accumulation of dirt in the viaduct and the feeding of salt in cold weather to keep the interior of the viaduct clear of ice and snow in the winter weather.

There is a special arrangement of switches, cross sections and turnout used when the current is to be used for lighting the streets and houses. The cars are backed just as easy as driven forward by simply reversing the current.

The heating of the cars is done by simply passing the current through resistance metal, which, in the cars at the fair, is German silver.

The cars on exhibition are supplied with one five-horse power motor, weighing about 600 pounds, and carry with perfect ease fifty or sixty passengers.

ONE OF THE GREAT ATTRACTIONS AT EXPOSITION.

From Boston *Herald,* December 11, 1884.

One of the greatest attractions at the Exposition is the Bidwell Electric System, which is now in successful operation. Two cars are run, in the front one of which is the motor, which in this case is a small Weston dynamo machine, illustrating the fact not generally known, that a dynamo can not only convert power into electric energy, but electric energy into power as well. Owing to the shortness of the curves, any considerable amount of speed cannot be attained in the fair building, but enough will be seen by visitors who will witness its operation to convince them that any speed desired may be attained on such a road,—limited, of course, by the strength of the current employed.

The cars are lit by Weston incandescent lamps, which take their current from the same circuit which propels the cars. This current is also utilized in illustrating the lighting of the roadway by the huge 125 candle incandescent "Mogul" lamps of the same company. The feasibility of heating the cars in winter is shown in one of the cars, where resistance coils are placed under the floor, and the heat from which comes upward through a grating or register.

The railway as now operated is further suggestive of the possibilities of electric railroading in the future, by the fact that the current operating it is derived from the Stanhope Street lighting station of the New England Weston Electric Light Company, and comes through about a mile of wire. It will show the public that there would be no difficulty whatever in operating a system of electric railways throughout the entire territory of Boston from one central plant. Electricians have long been satisfied that the thing could be done, and here at the exhibition the public can see it illustrated in the Bidwell Railway.

No brakes are used or needed in this system, the counter electric current which is set up by the direct current in the motor acting as a brake when the direct current is shut off. The car is under the most complete control of the engineer or motorneer, who can make it go fast or slow, forward or backward, at pleasure, and stop or start instantly.

In its present position, also, it illustrates an elevated railway how it looks to people who are on the ground, and how it feels to those in the cars to ride on an elevated track. Every one who witnessed the operation of the road during the day and evening of yesterday, or who rode on it, expressed the greatest satisfaction at its performance; and not a few predicted that before five years had passed away, an electric elevated railway would be supplying rapid transit to the people of the "Hub."

EXHIBITION OF TROLLEY AT PHILADELPHIA.

From Philadelphia *Ledger,* March 4, 1885.

An exhibition of the Bidwell electric railway system was given yesterday to members of the press and others at the laboratory and workshops of the company, No. 117 North Fourth street. The Bidwell system consists practically of a means of conducting a current of electricity and of making a continuous connection between the conductor and a moving body. The conductor consists of a split tube placed so that the open slot of the tube is vertically downward. The electrical connection is formed with the interior of the tube by a metallic wheel traveling along the slot, whose diameter is twice that of the tube. By this construction electrical connection is not liable to be impeded by snow, ice, or dirt, as would be the case if the conducting surface was exposed to the elements. Any form of a dynamo machine may be used as a source of electricity, and any appropriate form of motor used for transforming the electricity into power. It is expected that the company will use in actual service a special dynamo and motor invented by Mr. Benson Bidwell.

At the exhibition yesterday the car, which, it will be remembered, was exhibited in the Annex building of the Electrical Exhibition, last year, was used on a track laid around the laboratory, a distance of about 200 feet. The current was supplied by an Excelsior (Hockhausen) dynamo machine, and an Excelsior motor was inserted in the floor of the car. By means of a shunt, the car was lighted with twelve incandescent electric lights and heated by means of resistance coils. Three arc lights were upon the same circuit as the electric railway. It was stated that there would be no difficulty in telephoning or telegraphing from the moving car by means of the system recently practically exhibited in New York by the same current that operates the motor and the lights.

The special advantages claimed for the system is that currents of any desired degree of potential can readily and safely be used. The tube, if desired, may be completely underground in similar conduits to those used by the cable railway, and thus would be protected from obstruction or short circuit.

TRIALS WITNESSED BY RAILROAD MEN.

From Philadelphia *Times*, March 4, 1885.

There was an interesting exhibition yesterday on the fourth floor of 117 North Fourth street, of the Bidwell electric railway system, which was witnessed by many railroad men and representatives of the press. The track was 250 feet long, and the car—an open one, finely upholstered—was large enough to seat ten persons. Its motion was smooth, easy and rapid, considering the numerous curves that were necessitated by the limited space, and the same agent that gave it motion was utilized in lighting and heating it.

The dynamo from which the electric current is supplied was of five horse power. By two levers in the rear of the car it was easily kept in perfect control, the engineer being able to make it move backward or forward, slowly or quickly, or to stop or start at will. No brakes are used in this system, the counter electric current which is set up by the direct current in the motor acting as a brake when the direct current is shut off.

The same current that moves the car is made to light it by means of a number of Edison incandescent burners, and to heat it by passing through a resistance coil under the floor. The dynamo can be operated either by steam or water power, and may be located near the railway, or several miles away from it, if necessary. The current can be carried by wires to the conductors, which are laid beside the tracks on elevated roads, and carried to the motor in the cars.

In surface roads, it was explained, the current may be applied in a slot in the center of the track, while in elevated roads the conductor may be placed beside the rails. The system is the invention of Benson Bidwell.

CAR LIGHTED AND HEATED BY ELECTRICITY.

From Philadelphia *News,* March 7, 1885.

An exhibition of the working of the Bidwell electric railway was given yesterday afternoon for the benefit of members of the press and scientific and railroad men. The fourth floor of No. 117 North Fourth street was the scene of the exhibition and successful demonstration. A track is laid around the room, which occupies the entire floor, and the car travels over this track.

The car used is about the size of the smaller or bobtail street cars, and accommodated several of the gentlemen with a ride, five or six of them getting in at once. A dynamo for generating the electricity is at the lower end of the room, and furnishes between one and a half and two horse power pressure of motive power.

A wire connected with the dynamo transmits the current to brass rods or conductors placed on either side of the track, and these in turn furnish the motor. For street use the conductors are to be placed in the center of the track, a slot to be left open, through which an arm drops and transfers the current to the motor.

The car used yesterday was lighted by a number of incandescent lamps and heated by a layer of resistance coils. The same dynamo does all of this and besides lights several of the ordinary electric lights hung in the room.

ADVANTAGES OF THE TROLLEY SYSTEM.

From Chicago *Tribune,* September 4, 1907.

"Reduced fares do not seem to be the principal thing in sending people to the interurban trolley lines," said a well-known Illinois Congressman.

"Frequency of service, convenience to the neighborhood, and a sentimental disposition to travel direct from the center of one community to the center of another without having to change are the principal factors in the capture of the local transportation business by the electric interurban lines.

"We have built one link after another in our system, and in every case the result has been the same. The people have instantly appreciated the new service and we have not had to hunt for business because it has all come to us. We are in closer touch with the people themselves than the steam railroads ever have been or ever can be, because our line runs from house to house and from crossroad to crossroad, as well as from city to city.

"In my judgment the interurban electric lines are destined, within a comparatively short time, to monopolize the local business of the more populated states, not only passenger but freight and express as well. The future of the steam railroads is in their through business only.

"Our experience has shown that a small city on one or more lines of railroad can nevertheless be built up to a remarkable degree when the interurban system reaches it. Many large towns are not upon the main line of any railroad. Frequently they can be reached only by changing cars. Besides that, communication between cities in the state which do not happen to be upon the same line of railroad, or upon the same trunk line of travel, is often exceedingly difficult. A large trolley system such as that we have in Illinois can afford to run cars to almost every point of the compass, and the more they radiate from any city the larger the business and the greater the development of the city."

In this outline is embodied the real reason for the extraordinary success of the new system of transportation. A little study will show any one that a steam railroad and an electric line are essentially different in their methods of operation and always must remain so.

The steam railroads today consist of a locomotive carrying a number of cars which are run over rails. The cars may be essentially the same as those on the electric line. A standard gauge for the rails is common to both systems. The difference in the operation is, therefore, entirely concerned with the application of the motive power. The steam railroad train is run by a locomotive which generates its own power as it goes along. The trolley car receives its motive power, or "juice," as the motormen call it, from a central station, which may be miles away. The locomotive, which burns its own coal and makes its own steam, is a big affair, and as clumsy as it is uneconomical. It necessarily must carry a number of cars behind it to make it profitable.

Economical management of a railroad has for its foundation stone the creation of a type of locomotive which will pull the greatest number of cars in the quickest time with the least expenditure of steam, and with the greatest volume of steam from a given amount of coal.

It is evident, however, that the trolley car is a totally different thing. It creates no power and does not even store it. It is merely a contrivance by which electrical power is transmitted to the running gear of the car so as to push it over the rails. When a trolley car is standing still and the controller is shut off it expends no power. Every time a locomotive stops for five minutes or five hours while steam is up it costs its owners something for power which is absolutely wasted in the form of escaping steam and burning coal. Under certain conditions, therefore, the trolley car, receiving its power from a central station and costing its owners nothing when it is still, is essentially more economical than the locomotive.

There is another difference between the two styles of railroad which is not always apparent to the casual observer. The locomotive to be used profitably must draw a train behind it. The longer the train the greater the profit. If cars are drawn in trains by a machine at the head which produces the power it is evident that the railroad cannot afford to run those trains frequently. Every trolley car is its own locomotive. It costs no more to send out twelve trolley cars at an interval of five minutes each than it would to send out a train of twelve of them once every hour. Frequency of service, therefore, is as simple for the trolley line as it is difficult for the steam railroad. This is the secret of the coming monopoly of the suburban and local business by the electric interurban lines.

It means a good deal to the business man or to the housewife or even to the casual traveler to know that one can take a car from one town to another at intervals of from fifteen minutes to an hour. The railroad schedules are necessarily arranged so that the trains shall arrive and depart from the great cities during business hours or early in the evening. The result is that in many interior cities which are really entitled to consideration the railroad trains pass through early in the morning or late at night. Frequently the daytime trains are extremely few in number, and they are often of the accommodation variety and do not compete with the trolley lines in the matter of time.

On the other hand, most of the interurban systems, even in the interior, run through limited cars at intervals of a couple of hours, with local cars every hour and sometimes every fifteen minutes. For instance, from Evanston to Fort Sheridan the Chicago and Milwaukee road now runs cars during the week at intervals of seven and one-half minutes, while there is a fifteen minute schedule to Waukegan, and the through cars to Racine are only half an hour apart.

The Chicago & Northwestern railroad, which parallels the Chicago and Milwaukee line, cannot begin to compete with this service even in the rush hours of the day, and if the electric line has as good an entrance into Chicago it would only be a matter of a short time when it would get the cream of the suburban business on the north shore.

Frequency of service is, therefore, the determining factor in almost every case where the interurban takes business away from the steam road. This is as true of express and freight of the small package variety as it is in the case of passengers. Merchants can deliver express matter to the interurban line with the positive assurance that it will be started on its way within an hour or so at the outside.

It is just as feasible to run separate express cars as it is to run separate passenger cars, and neither service is at all dependent upon the other. If the express business is small and the passenger business large an unimportant compartment of the through car suffices for the packages, but as the express matter grows in volume it is a simple matter to put on special cars for this service and they can be duplicated to the extreme capacity of the road.

With proper safeguards and signals, cars can be run over the interurban line at intervals of five minutes. As each one possesses its own motive power and as each one ceases to be an expense when it is out of commission a fully equipped trolley line is practically an aggregation of economical locomotives.

As a result of the fact that the motive power is supplied by a central station, each car being able to run independently of the other one, there is an elasticity to the electric interurban service which never can be reached by the steam railroads. It is a simple matter to run one car after another to accommodate a crowd which suddenly appears.

Steam railroad schedules are as rigid as iron. They cannot be varied except with danger to the public. An interurban trolley system is seldom liable to such demoralization as that which overtook the Chicago and Northwestern suburban service on Labor day. Provision can be made for large crowds by sending out cars in squads instead of singly, and by the use of modern safety appliances a double track trolley line can be made to carry a service of a car every five minutes during the entire day or night, and yet on a moment's notice every other car can be dropped or the service still further reduced without interfering in the slightest degree with the general working schedule.

It may not be generally known, but it is a fact, nevertheless, that the trolley system is much more independent of physical conditions than the steam railroad. That is to say, a single trolley car, weighted down as it is with a heavy motor, will stay on the track in going around a much sharper curve than could possibly be negotiated by any train on a steam railroad. Furthermore, the trolley car will climb a heavier grade than is possible on steam lines, even with a doubling up of locomotives. For this reason the interurban projectors find it possible to twist their road around obstructions and to reach one small town after another which it would not be profitable for the steam railroad to deviate for.

The trolley line cannot go as fast and never will go as fast as the steam railroad unless present appliances are materially improved. It is likely to be put out of business temporarily by an electrical storm, and, having less power on the ground, it is less able to compete with heavy snow storms; but, on the other hand, its power is never killed by local conditions.

It is evident from this sketch of the differences between the two systems that the trolley line is peculiarly adapted to local business and the steam line for the present has no competition in the way of hauling passengers and freight long distances at high speed. The division of the field between the two systems is inevitable, and the movement is taking place with a rapidity which has caused some railroads to drop the local business entirely and cease stopping at certain stations where the trolleys have captured absolutely all the trade.

In his first message to the council Mayor Busse asked that the committee on local transportation take up and report on the question of electrifying the steam railways of Chicago. The council instructed the committee accordingly. The message follows:

"To the City Council—Gentlemen: Some little time ago my attention was called to the fact that the New York Central and Hudson River railroad and other railroads entering New York City had substituted electric motor power for steam power on their terminals in that city, thereby doing away with the smoke that is produced in such volume by the common type of steam locomotive.

"It has occurred to me in this connection that if electric motor power could be substituted for steam power on the terminals of the railroads entering Chicago and coming into the heart of the business district a large part of the smoke nuisance problem would thereby be solved.

"Acting on this thought while the council was on vacation, I invited a number of citizens of Chicago, including the chairman of the council committee on local transportation and the city health commissioner, to accompany me to New York for the purpose of observing the results of the electrification of the railroad terminals there.

"In New York we were taken over the terminals of the New York Central and Hudson River railroad by Mr. W. J. Wilgus, second vice president and electrical engineer of that road, who has been in charge of the entire work of converting the motive power from steam to electricity. We found that the immense traffic of the New York Central road and of the other roads using its terminals in New York was being handled successfully and, in fact, with the highest degree of efficiency by means of electrical power, and that the smoke nuisance produced by the common type of steam locomotive had been entirely eliminated.

"Our observations, while satisfying us as to the advisability of substituting electrical motive power for steam power on railroad terminals in the city, have no definite bearing, of course, upon the difficulties to be surmounted and the practical details involved in the working out of such a change. As Chicago is the greatest railroad center in the world, this problem of doing away with the common type of soft coal burning steam engines inside the city is, of course, a tremendous one, but it is a problem which I think the railroads realize must be faced some time in the near future, and it is one which the city must help to solve, to the end that the smoke nuisance may be eliminated.

"Therefore, I would recommend that this whole subject matter of the electrification of railway terminals in Chicago be taken up by the council committee on local transportation with power to employ such assistance, make such investigations, and prepare such reports as may be necessary to advise this council fully as to the possibility of installing the necessary electrical equipment for use on the railway terminals of Chicago to do away with the steam engines and eliminate the smoke nuisance from that source."

THE TROLLEY IS HUMMING AND COMING.

From *Saturday Evening Post,* March 10, 1906.

Once upon a time in Northern Kansas the postmaster, the druggist and the local commander of the G. A. R., who was also town marshal and auctioneer, went at night to wake up the banker. They had heard a rumor that some railroad surveyors were over north and they felt that the emergency demanded prompt counsel.

At that time—say twenty-five years ago—anywhere in the West the report that another railroad was coming to town fired civic hopes as explosively as, sometimes, last night's smouldering coals did the careless kerosene-can. Leading citizens who would have received the heralds of Kingdom Come—perhaps not without reason—in complete self-restraint, flushed with joy over the arrival of a surveyor's gang; and the most bitter of all impersonal ills of life was the announcement that the new road had, after all, decided to go to the town eight miles south.

In the fullness of time it developed that the new road charged the same rates as the old and was quite as heroic in resisting damage claims. Its passenger service gave the traveling man an additional chance to get out of town before night—and thereby wound the feelings of the hotel-keeper—and its freight trains gave the farmer two chances to have his heifer killed where there was only one before. But for the country town and the rural community generally the new road, in the end, meant nothing very important. The town is a little town still. The banker and cattle-buyer can get passes more easily than before, and the township bonds, which were gladly issued and donated to aid the new road, have been paid off or refunded. The farmer helped to pay them and has furnished most of the tonnage for the new line; but probably in the main he does not see where else he comes in, when the new line is either formally consolidated with the old or makes all its rates to small shippers in agreement with it.

What evoked the joy and caused the bonds to be voted was the idea of competition in transportation. Everybody now knows that railroads do not and will not compete except in regard to big shippers.

A new factor is appearing, in a limited way, and the eagerness with which this new factor is hailed discloses a pretty universal desire—whether well or ill founded does not matter here—for relief from what is to all intents and purposes, so far as concerns farmers and small merchants, a transportation monopoly.

This new factor is the electric road. In country communities almost all over the Middle West one will now hear the probable coming of the trolley discussed with about the same eagerness that was formerly inspired by reports of the coming of a new steam line. In this discussion farmers especially are interested, for the trolley ought to be especially the farmers' road. With its small units and frequent service it can, and in some instances does, bring both freight and passenger transportation practically to his door. It now carries, in some localities, the farmer's milk, butter, eggs and vegetables to the country market and brings out packages from the town. In certain communities, where the freight and express business of the trolleys has been well developed, the character of farm industry has been notably modified by it. As a rough rule, the country trolley runs once an hour, with rates for both passenger and freight decidedly below steam-road cost. In many cases the farmer finds it cheaper and more convenient than to use his horses. What it offers on the social side, in the way of cheap, speedy intercourse between farm and farm, and farm and town, need not be dwelt on here. Some typical interurban lines report that from fifteen to twenty per cent of their passenger business is between town and farm.

Of course, the trolley has already very decidedly arrived as a mode of transporting urban passengers. Electric roads in the United States now carry about seven times as many passengers as the steam roads. They transport well over four billion a year. But over half these passengers are carried in the cities having upward of 500,000 inhabitants. New York alone furnishes a billion to the huge total. This scarcely interests the farmer or small merchant. When he is in those centres, news that the trolley is coming is conveyed for purposes of warning and reproach rather than encouragement.

In the country the trolley came first, naturally, for passenger business, the field in which it was already highly developed. On the whole, its freight and express business is so new that perhaps the best idea of the efficiency of the electric road, as compared with steam, can be had by a glance at its record in the older field. The Census Bureau has recently completed an elaborate report on the subject, and it found that the fast, long interurban trolleys—being the type we are now interested in —carried 114,000,000 passengers in 1902; that the rate of fare in the Middle West averages about one and a half cents a mile, or, roughly, one-half the charge of the corresponding steam roads. In a great number of cases steam-road fares have been reduced to meet the new competition. Only the other day, in Iowa, a grand jury indicted the Rock Island road for making a discriminatory rate reduction to meet trolley competition. The *Railroad Gazette* says the number of steam-road trains between Cleveland and Oberlin have fallen off by half, because of the electrics. The average distance traveled by each steam-road passenger in the United States increased only five per cent in five years prior to 1897, and twenty-one per cent in the subsequent five years—a fact pointed to as indicating that the trolley is forging ahead in short-haul travel—although, of course, this is not necessarily conclusive.

The best development of the trolley as a complete independent transportation system, carrying goods as well as persons, has been in the Middle West, especially in Ohio, Indiana and Michigan. Last year a handsome terminal station for the use of interurban trolleys was built in Indianapolis, and only recently this station was improved with three freight-houses, each 24 by 195 feet. Recently, too, the trolley roads have built freight stations and yards in Crawfordsville and other interior towns. As to the effect of these improvements, one Indiana manager says: "We are now getting all the freight we can handle." A trolley freight terminal is being built in the Columbus, Ohio, wholesale district. One has just been completed in Kalamazoo, Michigan. In Topeka, Kansas, the trolley line now moves all the output of a stone quarry, and has arranged a car-lot freight transfer business in the city. In Massachusetts the management of the largest interurban electric, covering the southwest part of the State, is busy getting freight and express privileges, and proposes to organize a goods service from Fall River to Boston, and another Massachusetts company is reported to have bought out an extensive wagon express concern to take over its business

These—all recent happenings in different parts of the country—show the decided drift in trolley development. What the steam roads think of it is illustrated by a case at Grand Rapids, Michigan. The principal boat line running to Chicago had a pro-rata agreement with two steam roads covering freight brought in by rail and forwarded by water. Last spring it made a similar pro-rata arrangement with the trolley line. The steam roads gave notice that they would cancel their agreements unless that with the trolley was canceled. The boat line stuck to the trolley, however; the latter built a $30,000 freight-house, and had a big increase in its through freight business.

It is here that the trolley promises to do best as a goods carrier—that is, where it can get its freight to a big market independently of the steam roads, for the latter will not make livable arrangements with it. A line is now building from Kalamazoo west to Lake Michigan, running through some of the richest Michigan fruit country. The grape and fruit growers are watching its progress as eagerly as they watch for the spring thaw. With the trolley to carry their products to the lake and boats to take it to Chicago, they expect there will be less danger of a relapse to the private car-line extortions from which they suffered two and three years ago.

The idea of organization—partly to meet the organization of the steam roads—is taking root in the trolley world. Signs of somewhat crude beginnings in that direction are plentiful. Already there are voluntary associations, with periodical conventions and discussions of subjects of mutual interest. At recent conventions the arrangement of through freight rates and schedules has been urged, for the trolley lines are beginning to be able to offer some pretty respectable long lines—one, at least, of 365 miles.

It is rather interesting, by the way, as illustrating the superior adaptability of the service, that the Indiana Union Traction has recently installed a system of train dispatching by telephone, every motor car carrying an instrument that can be attached to a plug at any switch or turnout. One dispatcher handles 101 miles of road, the other 119 miles. On the 101 mile division there are 288 trains every twenty-four hours.

In the matter of rates, as would be expected, the situation is rather chaotic. Sometimes, as regards rates, the business is done on a passenger rather than a freight or express basis. A combination of Ohio lines, for example, carries milk at a flat rate of one and a half cents a gallon regardless of the distance. Instances of straight freight business at about half steam-road charges may be cited; but it is all too new as yet to permit of any important comparative showing—and when steam-road business has been bitten, it is a mere flea-bite. It must be remembered that the total trolley mileage in the United States outside of the cities and towns is only some seven to eight thousand miles, and though the freight, express and mail cars of the fast interurban trolleys run something over 1,000,000 miles a year, their business looks very insignificant beside that of the steam carriers with their 210,000 miles of road and 1,400,000,000 tons of freight moved annually. It is as a suggestion of what may be that the trolley is so widely interesting.

Whether it really will be is, of course, another question. It often happens in a selfish world that the big fish eat the little ones.

In New England a good deal of trolley mileage has been taken over by the steam roads. The Delaware and Hudson has just bought some electric lines around Albany and Schenectady. The Pennsylvania takes a bite now and then. It is fair to assume that the absorbing process will be accelerated as a result of various plans now afoot to electrify steam lines—in the New York, New Haven and Hartford, for example, in the Manhattan terminals of the New York Central and Pennsylvania, the Chicago terminals of the Illinois Central, and so on.

It must be remembered also that the country trolley line itself has been to a considerable extent an affair of high finance.

The old Widener-Elkins syndicate in Philadelphia—which certainly was not nurtured on new-mown hay—and its successsors, were extensive promoters in this field, and even now half the interurban mileage in Indiana is controlled by the United Gas Improvement crowd of the Quaker City, which is also active in Ohio and is said to have further big plans.

The coming of the country trolley has been like most pioneer enterprises in that it involved a hard time for many of the pioneers. The Everett-Moore syndicate of Cleveland—one of the largest trolley builders—had to face bankruptcy. Not long ago the holding company that controls lines touching eighty-eight cities and towns in Massachusetts passed a dividend. Recently, also, some lines of the Appleyard syndicate, an extensive Ohio exterprise, got into financial straits.

But ground is seldom broken without breaking some men.

PROBLEM OF THE THIRD RAIL.

From the Chicago *Tribune,* September 8, 1907.

Running west from Chicago to Wheaton, and thence spreading out in form of a "Y" to the sister cities of Elgin and Aurora, with Batavia tucked in between on a transverse line, there may be found an interurban electric railroad which is a type peculiar to itself, at least in this section of the country.

It is operated with the third rail system, is capable of producing the highest possible speed known to electric railroad engineers, and was constructed on a costly basis which has made it the envy of similar lines the country over.

Of course everybody knows, or ought to know by this time, that with the third rail system heavier cars can be run and higher speed developed than by the trolley. On the other hand, everybody equally knows, or ought to know, that under certain conditions the third rail is a dangerous thing and can be employed only where the lives of the public are carefully safeguarded.

There are those who think that the third rail may have to be abandoned on the Aurora line when the country is completely settled up, but its managers do not look forward to any such contingency, although it is well known that the franchise of most of the towns on the line between Chicago and Milwaukee prohibit the use of the third rail as a means of distributing the motive power.

Engineers will clash for a good while to come as to the wisdom of using the third rail system on surface roads, but there can be no doubt that in the meantime it furnishes the ideal system of transportation.

Not everybody understands why it is that the trolley has its limits as regards speed, while the third rail cars are able to make so much better time and apparently with the same effort. The secret lies entirely in the method of producing the contact which conducts the current of electricity into the motors attached to the wheels. The third rail running alongside the regular track is absolutely permanent. It presents a broad, smooth surface and it has been found possible to run over it a metal shoe attached to the car and so constructed that the contact between the rail and the shoe is absolutely perfect at all times. Third rail electric cars do not get off their trolleys and they do not lose their shoes until they wear out by constant service, when they are easily replaced by an electrical cobbler.

Most people who see a trolley car naturally take it for granted that the wheel at the top of the trolley pole is in close contact with the wire all the time. This is true when the car is at rest, but it is far from true during rapid motion. A trolley line necessarily hangs in long loops. When the wheel runs over it it pushes the loop up in the center and the contact is perfect. When the wheel reaches a point near where the trolley line is suspended it naturally follows the line of least resistance, and when the car is going fast inevitably jumps from one loop to another and skips the sustaining point altogether.

Whenever the trolley wheel leaves the wire, whether it is thrown off altogether or is merely jumping from one loop to another, there is a complete cessation of electric current. The result is that the electric car with the overhead trolley, unless special devices are provided to prevent it, receives its motive power in a series of jerks. Besides that it cannot draw the same amperage from a wire as the third rail car does from the broad metallic surface beneath its shoe.

This accounts for the fact that the third rail system is capable of producing the highest grade of speed and the motion of the car is generally much smoother than if an overhead trolley were used.

Of course, the third rail is a deadly instrument. It is heavily charged with a current of electricity sufficient to kill a regiment of men. A private right of way for the line is, therefore, absolutely indispensable. Where a surface railroad crosses a public road at grade the third rail must be cut away absolutely and the connection for the current made by an underground cable passing beneath the roadway. It is necessary also to provide cattle guards and put up signs at all of these crossings, warning the public against the dangers of trespassing on the right of way.

The third rail system permits of heavy cars, and there are four motors of 125 horse power each, or about twice as much as are put under the largest car of the overhead trolley systems. This necessitates a substantially built roadbed, the result being that the Aurora, Elgin and Chicago road is an expensive proposition and always will be.

It is far from being a menace to public life at the present time, and for a natural reason. The public was so carefully warned away from the third rail that every one was at once educated up to the danger, and I have been told that with the exception of an odd employe now and then there has only been one life sacrificed to the third rail since the opening of the system.

As a road the Aurora line is luxurious in its appointments. It does not run sleeping cars because the distances are far too short, but it runs fast trains with a schedule of an hour and ten minutes from Chicago to Aurora or Elgin, an average distance of about forty miles, including half a dozen stops en route. On several trains—for they run trains on the third rail line out of Chicago—there is served an excellent buffet lunch, with hot meat, eggs, potatoes, sandwiches, soups, and a variegated wine list.

The company runs trains all day long on the half hour schedule, with eight limited trains sandwiched in on the quarter interval during the rush hour. Sundays the limited trains are abandoned and the regular service crowded together on the fifteen minute schedule during the daytime and a liberal allowance for the night traffic.

On the average the straight fare on the third rail system is about 1½ cents, or 25 per cent less than the tariff of the steam roads, and the commutation rate on the sixty ride monthly ticket averages less than 17 cents from Chicago to Aurora and Elgin. This makes the third rail system an ever present competitor of the steam road. That it succeeds at all is a proof of the inherent good quality of the electric system, because it is forced to compete with the Northwestern and the Burlington, two of the highest types of suburban railroads in the country.

By far the most interesting thing in connection with the development of the Elgin, Aurora and Chicago line is the question of power supply. When the promoters of the road finally constructed their big power house at Batavia they found they could produce electric current far in excess of any demands they could make upon the supply themselves. The result was that they immediately became producers of electricity in a wholesale way.

The street car lines in Aurora and Elgin were first taken care of. Then the current was distributed to the elevated road at Chicago. Power was supplied for the Aurora and Joliet line of the Fisher system, and for the trolley system owned by the Aurora line itself, running from twelve miles south of Aurora at Yorkville to Carpentersville, six miles north of Elgin, and forming the cap piece for the big "Y," of which Chicago is the base.

When all the demands of all the adjacent transportation lines had been looked after the third rail people found they were still in the market as sellers of electricity. Just here they ran up against the municipal ownership idea and knocked it into a cocked hat. The city of Elgin had a municipal lighting plant, with a completely equipped power house of its own. It seemed to some of the city fathers that the light was costing them a good deal and they appealed to the interurban line for technical assistance. The result was that the city of Elgin abandoned the idea of lighting the town by the municipal plan. The power house and all the local connections were turned over to the electric railroad company, which since has allowed the local power house to lie idle and has supplied the city of Elgin with electric lights at a cost to the consumer of approximately 30 per cent less than that charged by the municipal plan.

Much the same thing took place at Wheaton, where there was a 12 cent rate. There the railroad company agreed to sell the town its electricity at a reduction of 50 per cent, or an average rate of 6 cents, the town doing the distribution over its own wires and pocketing the difference in cost of producing the power. In Glen Ellyn the experience was the same. In Lombard the railroad company built the distributing plant also and then turned it over to the village, which paid for it out of current receipts, and now operates the distributing plant as its own, but receives the power from the railroad company at wholesale rates.

It is not yet out of the range of possibility that the McKinley system which is pushing northward with the idea of securing through line from Chicago to St. Louis may ultimately com into this city by way of the Aurora line and the Metropolita elevated. This could easily be accomplished, it is said, by fittin the ordinary shoes to the trolley line of the Illinois Traction system, so that they would have a direct entrance of their own as far as the Fifth avenue terminus of the Aurora line.

TROLLEY NETWORK EAST AND WEST.

From Chicago *Tribune*, September 6, 1907.

Reference to the railroad maps of Ohio, Indiana, and Illinois will show that Cleveland, Cincinnati, Toledo, Columbus, Indianapolis, and Detroit have been making themselves the centers of individual spider webs of interurban trolley systems, while smaller cities of the Central West have been quick to take advantage of the new means of building up connections with surrounding territory. Each of the places named is the hub of a system of radiating trolley lines of great value to the central cities.

It is at once apparent, after a study of the interurban trolley map prepared by Bion J. Arnold, that the territory between Columbus and Indianapolis, and from Cincinnati northward to Toledo and Detroit, with the lake shore extension eastward to Cleveland, is fairly gridironed with trolley roads. They connect manufacturing towns and commercial centers, and open up the rich agricultural country in between to a wonderful degree. This means a vast increase of business for the larger cities of Ohio and Indiana.

By a careful choice of routes one may pick a trolley line from Indianapolis northeast to Toledo, and thence eastward along the whole shore line of Lake Erie, through Cleveland to Erie, Pa. The time is practically here when a similar journey may be made from Wheeling, W. Va., to the Illinois line.

Chicago has two fine suburban lines reaching westward to Aurora and Elgin and northward to Racine, with a southern connection to Joliet, but it has yet to make itself the center of a real interurban network. This city has been for so long a time the greatest railroad center in the world, one would think the strenuous community would jump at the chance of securing these electric feeders for its commercial supremacy, but the contrary has been proven. Possibly Chicago has been so accustomed to big steam trunk lines it thought it could be independent of snuffy little trolleys. The steam roads undoubtedly made Chicago great, but that is no reason why the trolleys should not help materially to make it greater.

After all, the interurban system is such a new thing that busy cities may be forgiven for failing to recognize the onrush of a strange giant in the transportation fight. In fact, Chicago has had such wretched transportation facilities within its own borders it might not have been prepared to handle the interurban business. Possibly it was a case of the wind being tempered to the shorn lamb, but now that the street car problem in Chicago has been practically solved, attention must be devoted to the interurban business if Chicago is not to continue to lag behind the more enterprising cities of Ohio and Indiana.

It is true that as far back as 1840 inventors and scientists were experimenting on electric motors, but it was not until Siemens and Halske organized their celebrated firm in 1876 that electric traction became a commercial possibility. Edison was operating an experimental line at Menlo park in 1880. Five years later twenty lines were in operation in various cities and today, twenty years later, every city in the country is equipped with electric car systems, while the lines from city to city are multiplying as fast as the engineers can lay out the routes. It is evident that the interurban road, as we know it now, was brought into being as the natural successor of the elevated and the suburban surface road in the Eastern cities. From these city roads in Massachusetts have grown interurban lines throughout the West with better rolling stock, better roadbeds, more frequent cars, and shorter running time, although in New England the old city car is still used.

In the great trolley belt of Indiana and Ohio and on the Illinois lines as far as they have progressed the interurban road has generally been created as an independent system, although it has, as a matter of course, absorbed the corporations running the city lines and electric light plants. Even where one corporation owns the entire system the city and the interurban services are kept entirely separate, except that they receive their power from the same source. Where there are separate corporations the interurban cars sometimes pick up a small amount of the city business, turning over, however, a large percentage, if not all, of the receipts to the local company.

The census bureau in 1902-1903 undertook the collection of data showing the condition of the interurban systems at that time. Since then the business has outgrown all attempts at its statistical history. The census figures showed, however, 1,600 miles of interurban lines in Massachusetts, 1,278 miles each in Ohio and Indiana, 1,113 miles in Pennsylvania, and about 600 miles in Illinois. Since that time the work of construction has progressed so rapidly accurate figures cannot be given, but it is probable that Ohio and Indiana have each passed Massachusetts in mileage, although the Bay state and Connecticut and Rhode Island and the lower ends of Vermont and New Hampshire still furnish the largest compact area of interurban development.

It is in the Middle West that great distances have to be conquered. Therefore, the sleeping car is found on the through lines in Ohio, Indiana, and Illinois, while special chair cars, with buffet lunches and "limited" service, with extra fare, are becoming common. The interurban trolley car today on the best lines and the best trains is quite as luxurious in its way as any vehicles found on the best steam trains in the country. In many cases, particularly in Ohio, special cars are being built for particular service, one notable example, elaborately furnished, having cost $11,000.

In the three states mentioned the speed of the interurbans has been developed to an extraordinary degree. The Aurora, Elgin and Chicago line, which runs over a third rail system, easily speeds up to sixty and seventy miles an hour, and the actual running schedule from Chicago to Aurora, forty miles, including all stops, is only one hour and ten minutes for the limited trains.

There is a distinct tendency in the states of the Middle West toward a combination of interurban interests, made necessary by the long distances, which in turn demand through cars and fast time. At first local capital started lines between nearby cities. These were so successful the promoters found no difficulty in securing outside money for extensions. Then this outside capital found itself appealed to for funds to build competing roads, which could not possibly be successful under such circumstances. The inevitable happened. The big capitalists concentrated their investments. The result was the rapid consolidation of the short lines into large systems. The public has been the gainer by the adoption of through cars and related timetables at transfer points. Here in Illinois, at least, and possibly in other states, there has been worked out a curious interchangeable commutation ticket. The suburbanite at Aurora may buy $6 worth of 5 cent coupons at his own ticket office for $5. These coupons are good on a majority of the Illinois roads, including the big system south and west from Peoria and Danville. The coupons represent cash, not mileage, the trolley lines have not yet been standardized in the matter of fares or freight rates, some charging 2 cents a mile for passengers and competing directly with the steam roads, while others drop as low as a cent a mile on round trips.

All of these interurban lines in Illinois, Indiana, and Ohio are doing an express and freight business, the future of which no man can estimate. Just how profitable it may be for electric roads is one of the things careful traffic managers would like to find out. The United States Express Company operates a regular service on the Chicago and Milwaukee line and is making it pay. The Electric Package Company is a corporation representing five Cleveland interurban lines. Each line furnishes its own train crew, and the package company the express messenger. The company does a regular express business on a quick schedule, and the gross earnings in 1905 were more than $200,000. Even bulk freight is carried by most of the trolley roads where it can be done without through delivery to another line or into the large cities. The freight traffic is generally confined to particular commodities originating along the line of the road. For instance, the McKinley lines load coal at the mines and dump it anywhere along the right of way, the farmers combining to buy their fuel in carload lots. The Chicago and Milwaukee has made a specialty of gravel from its own beds at Libertyville and Kenosha. All of the lines are going extensively into the milk business, and refrigerator cars for butter, eggs, fruit, and vegetables are becoming more common than the sleepers. The trolley also seems to furnish a solution of the problem of how to furnish ice for country towns and farm houses. In Indianapolis in particular the interurban lines reach the center of the city, permitting express arrangements with the smaller cities, while in Chicago the Aurora line is the only large road with a good downtown outlet.

One thing is certain, an interurban trolley line connecting two cities, with a good agricultural country as the meat in the sandwich, will pay almost from the start from its passenger traffic, the express and freight business being in the nature of a by-product and pure "velvet."

TROLLEY LINES AS TRADE GETTERS.

From Chicago *Tribune,* September 9, 1907.

As a means of neighborhood communication, as a trade getter, the interurban trolley is far ahead of the steam railroad. It induces people to come into the central city who would never move away from home if they had to depend on a railroad running on regular time tables. On the contrary, the interurban lines running into the principal cities of Indiana and Ohio are crowded to their capacity almost all the time.

Interurban lines which started out on a two hour schedule have soon been compelled to double the number of their trains. Moreover, the country population has taken readily to faster service and more luxurious cars, and has shown a readiness to pay for special accommodations which is not in accord with the popular estimate of the bucolic character.

The experience of most of the interurban railroads is that while the long distance traffic is not generally profitable, there is a great amount of journeying from town to town, and it is this class of travel which the steam railroads never have been able to cultivate with success. Suburban travel by steam roads always has been profitable because it is made up by people who do business in a city but prefer to live in the country. The smaller cities, however, have always been more or less isolated and remained so until the advent of the interurban electric road.

Ohio is peculiar among the Western states because of its large number of small cities. It has, therefore, become the natural home of the interurban system, even to a greater extent than Indiana. The Ohio neighborhoods are all prosperous. The operating expenses seem to be small as compared with the gross receipts, and, while the steam railroads are frequently managed by receivers, the trolley lines exhibit a remarkable history of financial success.

In most cases interurban lines organized as individual enterprises have been able to buy up street car and electric light plants in practically all the towns along the line, and in many instances the purchases have been made out of current receipts. In fact, an interurban line to be financially successful necessarily must control the local plants, because the big powerhouses now in use can be profitably managed only on a wholesale basis.

The interurban line which manufactures its electric power on a large scale soon finds itself in a position where it can defy all competition and can supply light and local power merely as a surplus. The limit of distribution of electric light and power has not yet been reached, and the interurban lines for a radius of a hundred miles, with the local car lines and electric lights in the whole territory, can easily be supplied from a central point at a price which simply defies small local competition.

In the early days of the interurban system, which is not ten years ago, it was supposed to be necessary to have powerhouses at frequent intervals, and a good deal of money was wasted in that way. Then the electrical engineers found they could handle their currents at long distances. The result was an inevitable combination of interest, so that now in Illinois, Indiana, and Ohio three syndicates of capital practically control the systems of the three states so far as their strictly interurban business is concerned.

Travel by trolley came just in time to relieve the steam railroads of their increasing congestion. The trolleys practically took possession of the local business at a time when the steam roads were being taxed to their utmost capacity to look after the through traffic.

Most of the through cars now carry baggage as a regular part of their business, the steam railroad rule of 150 pounds for each passenger being generally observed.

The time is not far distant, it is said, when nearly all the steam railroads will seek to control their own trolley system. The first move in this direction was made wisely by the New York, New Haven and Hartford railroad, under the direction of President Mellen, and that line now runs both steam and electric lines side by side, and with equal profit. Those who have had practical experience with the management of electric lines insist that the steam roads will be forced, in the next five years, to adopt electricity as the motive power for all local lines, and possibly on the through routes.

The real electric locomotive is still to be developed. according to the opinion of the best interurban managers. For passengers the individual car with its own motive power has many advantages. It permits a frequent schedule, which seems to be in the minds of the people the controlling argument for the adoption of the electric system. As the freight and express business grows on the electric lines, however, trains of cars separate from the passenger coaches will come into use more and more. Then the electric locomotive, pulling many cars, will come more and more into use for all freight purposes. In fact, on a number of lines it has almost been found necessary to run trains and the electrical engineers have provided a system by which cars are harnessed together and the power applied equally by a single motorman.

With traction depots in many of the large cities and with long lines under a single system, the interurban line has grown to be something entirely distinct from the local street car roads, of which it was once merely an extension. The electric trolley as a means of transportation between cities is as much of a fixed fact now as it is on the streets of the average city, and the chances are that we have seen only the beginning of this means of local travel.

DEVELOPMENT OF INTERURBAN BUSINESS.

From Chicago *Tribune,* September 10, 1907.

Standing in the middle of the great traction depot in the heart of the Indiana metropolis, with a dozen cars ready to start in as many directions, one is able to get an accurate idea of the development of the interurban business.

From the commercial and political metropolis of Indiana there radiate electric lines which tap every corner of the state and which bring in passengers from the farthest portions of Indiana. The Traction building in Indianapolis is not only unique in its way, but it is an actual factor in the building up of the city which cannot be misunderstood or neglected.

Nowhere else, so far as I know, has the interurban idea [illegible] developed to such an extent. The traction depot in Indianapolis is as busy a center as any steam railroad depot in Chicago, and the estimate of 6,000,000 passengers handled by the electric roads running into the traction station in Indianapolis is well within the mark of absolute accuracy.

In this station one may take through cars for Dayton, O., on the east and Fort Wayne, Ind., on the north. On other tracks are cars to Muncie, Anderson, Kokomo, Logansport, Marion, Richmond, Lafayette, and other thriving towns. By a transfer or two one may reach Louisville, Ky., or Columbus and Cincinnati, in Ohio.

Joined together in a union depot and practically under the same systematic management, the interurban transportation lines of Indiana are a complete and formidable competitor to the steam roads which gridiron the state. So complete are they in their organization that one may readily understand the splendid commercial growth of the Indiana metropolis.

Underneath the shadow of the commercial strength of Chicago, Indianapolis has grown to the stature of a great city. Seven years ago there was not an interurban line in existence. Since then Indianapolis has been welded with lines of steel to Fort Wayne, Lafayette, Columbus, Richmond, and all of their intermediate towns.

The traction station in Indianapolis is really unique. It became possible only when the interurban lines were so strong that they overcame all local interests. The city street railroads do not run into this depot, which is used exclusively for the interurban business. There are no less than eleven distinct interurban lines running into this central depot, which is as busy a place on the hours and half hours as one could easily imagine. The Traction building in Indianapolis is as recognized an institution as the courthouse or the state house itself. Most of the trains leave on the even hour, so that at that time one may usually find ten or a dozen cars ready to leave for the outlying cities of Indiana.

"I do not think we can cut into the steam roads," said Vice-President Peck of the traction combination. "In some way we seem to have developed an entirely new business. Now and then we hear that the traction roads have broken down the business of the steam lines, but as a whole we find that we have taken out a class of business the steam lines failed to secure.

"We do not attempt to do a general freight business, but I suppose the package freight we pick up might be classed as express. Thus far the interurban lines are not prepared to handle freight. So far as I can see it, the future of the interurban lines lies rather in the passenger business than in the freight possibilities."

There has been no agreement as to passenger fare among the interurban roads of Indiana. The tariff ranges all the way from 1 to 2 cents per mile, and the commutation rates are regulated by the steam roads. Often the trolley lines are able to take advantage of the lack of through communication. For instance, most of the rail routes of Indiana run east and west. It is not easy to progress from Indianapolis to Fort Wayne or South Bend by rail. Yet the trolley goes to Fort Wayne from Indianapolis twice a day, and the extension to South Bend is only a matter of time. Here, as elsewhere, the frequency of the trolley service is the one determining factor in its success. On the even hours the trolley station in Indianapolis is crowded to its utmost capacity, and a dozen cars are waiting for their passengers. On the uneven hours and on the half hours, to a limited extent, Indianapolis is still in touch with rural Indiana.

This terminal station of Indianapolis is in the heart of the city and represents a direct connection with the smaller cities of the state. Thousands upon thousands of people pass into the traction station in Indianapolis and out upon its interurban lines. It is a kind of traffic which has been neglected too long by the great cities. Suburban business, both in regard to passengers and freight, is certain to be absorbed by the electric line within the next generation of commercial progress.

In his general article on interurban railroads Edward Dana Durand has shown that the significance of the electric railway as a factor in the transportation of commodities lies chiefly in two directions. In the first place, it carries considerable quantities of goods between town and country.

In the second place, the electric railway furnishes much more frequent and prompt service between small towns and between these towns and large cities than is furnished by the steam railways. This is the case not only as compared with the light freight traffic on steam lines but even as compared with their express traffic.

COMFORTS OF TROLLEY CAR TRAVEL.

From Chicago *Tribune*, September 11, 1907.

By trolley from Indianapolis to Dayton and from Dayton to Columbus is a long journey, but worth the making as a demonstration of modern interurban possibilities. From the traction station in Indianapolis one may travel comfortably direct to Dayton, and from there either to Cincinnati or Columbus as the case may be.

On the limited trains of Indiana and Ohio one may find complete comfort, amounting to almost a luxury. When the habit of traveling by trolley is once firmly established one wonders that the nuisances of the steam roads were ever submitted to. The electric line is the perfection of traveling—at least for short distances. There is a freedom from dirt and cinders and one feels nearer the country through which he travels than on the steam road.

The trolley line is essentially a neighborhood affair, because stops are made at unfrequented crossroads and the county passenger is much more in evidence that the through tourist. It is the unanimous opinion of the managers of the trolley roads that they cultivate the habit of traveling.

When the distances between any two towns is at all great the steam railroad is practically free from competition, but for short distances the electric trolley line is practically master of the situation. All through the interurban belt of Indiana and Ohio the traveling public has come to recognize the convenience of catching a car at frequent intervals.

If the traveler misses one car he takes the matter philosophically because he knows that another car will start in a few minutes. The result of the short intervals between cars is that the country people travel much more frequently than would be the case if they were dependent on the rigid schedules of the steam roads.

The proprietors of the big department stores in Indianapolis and Cincinnati say that they have almost doubled their trade since the introduction of the interurban system of travel. Curiously enough the local stores of the small villages have not lost any custom as the result of the traveling habit induced by the interurban cars. These village stores have found it simple to increase their stocks, and have slowly but surely met the competition of the city stores by increasing the variety of their own supply. The effect has been felt more particularly by the groceries and meat markets.

The electric car has added enormously to the business of the supply stores of the country towns. Villages where perishable goods simply could not be had ten years ago are now supplied with fruit and vegetables as a matter of course, and the express compartments on the electric cars radiating from such a market point as Indianapolis are frequently loaded with cantaloupes from Colorado and watermelons from Georgia.

The traffic managers of all the interurban roads all tell the same story as to the extent of their express or package freight business. It is growing every day, and only the lack of depot facilities keeps it within bounds.

What is not so generally understood, but what is an unpleasant symptom, is the combination of the interurban lines into a few great systems. The majority of the lines in Ohio, as well as in Indiana, are controlled by the combination of Philadelphia capitalists known as the "U. G. I." Local managers are frequent in Columbus as in Dayton and Indianapolis, but the great bulk of the interurban roads in the two states is owned by the Philadelphia syndicate.

This community of interest may before long result in a monopoly of the interurban business such as the general public is not entirely prepared for. In most cases the trolley lines do not cross state boundaries. They are controlled to some extent by the local state authorities, but as yet the interurban business is so novel in its character that the railroad boards of the different states are not prepared to negotiate it, while the federal interstate commerce commission has not yet awakened to the importance of the business being done by the interurban roads.

The Philadelphia combination apparently has been alive to the situation, as today the majority of the interurban roads from Danville and Paris, Ill., on the west, to Erie, Pa., and Wheeling, W. Va., are controlled by the Philadelphia syndicate. With this goes almost invariably the management of the local electric light and in most cases of the local street car lines.

The effect of the interurban traffic has been that of economy of power when produced by a central point and distributed long distances. In this lies the secret of the electric line. It can transmit its power long distances without the slightest loss.

An interurban road can create enough electric energy at a single power station not only for its own use but can successfully supply power and light to all the towns along its line. Electric energy, as heat, light, and power, can be transmitted from a central plant for many miles without a perceptible loss and with only a few wires as the means of transmission. As a natural result the interurban line is in a position to dominate the electric lighting and power of a dozen important towns along its line.

Steam as a motive power cannot be transmitted for any great distance. The locomotive must create its own power and must carry its own coal to make its own steam, which is destroyed the minute it is used. Electric energy, on the contrary, may be stored up and it may be transmitted hundreds of miles without the slightest loss.

The fact that the Aurora, Elgin and Chicago road can supply electric lighting from its central power plant at Batavia at a lower rate than the municipal plants in Glen Ellyn and Wheaton is an evidence of the profit there is in the interurban business.

PENNSYLVANIA SYSTEM TO BE ELECTRIFIED.

From Chicago *Examiner,* October 5, 1907.

PITTSBURG, PA., Oct. 4.—The Pennsylvania Railroad Company is committed to the electrification of its entire system. It will begin with the New York terminals, later the line from New York to Philadelphia, then the Philadelphia terminals and finally its roads that extend westward from Philadelphia. The work will be done as rapidly as possible.

This announcement was made to-day by Pittsburg officials of the company. At first only passenger trains will be operated by electricity. But this will be followed quickly by the freight service.

SUITS TO RECOVER ROYALTIES.

PART IX.

Suits to Recover Royalties.

Some years ago, while knocking about the city of Chicago, Prof. Bidwell fell into conversation with a young superintendent of a West Side horse car line relative to the cost of operation. The superintendent said that the motive power of his company (horses) then cost seven dollars ($7.00) a day for each sixteen-foot car. This cost included feed, attendance, shoeing, et cetera, of horses and general repairs.

The cost of electric power to drive the present-day 30 and 40-foot cars is about five dollars ($5.00) a day. This expense covers coal, firemen, engineers, electrical generators, et cetera.

The difference between the old horse car system and the present trolley system in cost is seen, at a glance, to be at least two dollars ($2.00) a day per car (saying nothing of the increased carrying capacity of the now much larger cars). Allowing one dollar ($1.00) a day per car as interest on the increased capital needed to apply electricity (considered a fair allowance by all who have taken the trouble to compute the interest), there is still a difference of one dollar ($1.00) a day per car in favor of the trolley system.

Therefore, it is readily seen, the inventor of the trolley system is entitled to at least one dollar a day royalty on every trolley car operated in the United States. Since there are at least eighty thousand electric cars now running in this country, it is not hard to see that Benson Bidwell should be in daily receipt of at least $80,000 in royalties, an annual income of twenty-nine millions two hundred thousand dollars.

Notwithstanding Prof. Bidwell is entitled to this vast sum annually, he is yet a comparatively poor man, living on a small salary received from the Bidwell Electric Company.

The electric trust and other large electric companies which build equipments for the trolley railways have made more than three hundred millions by stealing his patented processes and ideas, and this fabulous sum does not include gains derived in countries other than the United States.

Prof. Morse, inventor of the telegraph, did not secure patents in Europe; but European countries, after his telegraph had come into use abroad, donated him a lump sum of $400,000 as a partial recompense for his useful and now indispensable invention.

In view of what was done for Morse, does it not appear but just and fair that those European countries (the inventor being neglected at home) should give to Prof. Bidwell a like sum as a small token of public gratitude for the greatest industrial, commercial and social boon of any age?

The trolley car carries millions every day, and its benefits can be reckoned only in the millions.

If any benefactor of the human family ever deserved the Nobel

Prize more than Prof. Bidwell he was or is a prodigy in philanthropy to mankind. Rudyard Kipling received the world prize this year (1907); why not Prof. Benson Bidwell in 1908?

In 1906 the people of the United States enjoyed seven billion two hundred and forty million rides on the trolley cars. This is an average of ninety rides for each man, woman and child living under the Stars and Stripes in America.

Now, if each of these eighty odd millions could afford to pay to the inventor of the trolley car a paltry one cent each per annum, it would bring to him a sum equal to eight hundred thousand dollars a year. This sum could be paid to him through an annual appropriation by Congress from the United States Treasury, in 2 per cent 50 year government bonds. The people would not feel the loss of this sum; and, if the appropriation were cut down to one-tenth, or eighty thousand a year, the appropriation would be a mere bagatelle to the people and the government.

Bidwell's trolley patents run twelve years from date (1907) and, should he and his son again go into the courts to fight for their rights, the cost to the people of the United States, in court fees, lawyers' retainers, et cetera, would be far beyond eighty thousand a year; and it might reach beyond even eight hundred thousand dollars a year.

The royalties on trolley cars now operating, even at the trifling sum of twenty-five cents a day, would net to Benson Bidwell, in the next twelve years, the enormous sum of $87,600,000.00. And the number of cars is daily increasing; so that it is but fair to infer that the royalties would greatly increase, perhaps double in twelve years.

The question arises: Can the people of the United States "look the trolley car in the face" without blushing, when they know and remember that the man who invented it is living in a rented house, he and his good wife, who has stood so nobly by him through sickness and poverty for thirty years, having only the necessities of life—and those *earned* by the inventor at the feeble age of seventy-two years? For, notwithstanding Bidwell has given to the world this priceless boon, he now, old and decrepit, must daily go to his onerous labors, just as any other younger and abler man who has never done aught for his country and people.

It is the least that the people of America can do to bring pressure to bear on their representatives in Congress to vote an appropriation that will keep Bidwell and his good old faithful mate from want in their few declining days.

The array of patents appended, it will be seen at a glance, furnished Bidwell all ground needed or desired on which to base the numerous suits filed in various cities for infringement. The list here given is not complete, but it shows enough to convince the most skeptical of the inventor's just claim to all he and his attorneys asked in the numerous actions brought.

Patent No. 305,730, dated Apr. 24, 1884
Patent No. 315,113, dated Apr. 7, 1885
Patent No. 318,594, dated May 20, 1885
Patent No. 504,549, dated Sept. 5, 1893
Patent No. 517,258, dated Mar. 27, 1894

Patent No. 392,660, dated Nov. 13, 1888
Patent No. 689,596, dated Oct. 15, 1901
Patent No. 373,046, dated Nov. 15, 1887
Patent No. 86,033, dated Dec. 11, 1906
Patent No. 39,628, dated Dec. 6, 1906
Patent No. 4,868, dated Feb. 28, 1907
Patent No. 6,369, dated Dec. 11, 1906
Patent No. 100,811, dated Sept. 4, 1906
Patent No. 845,628, dated Feb. 26, 1907
Patent No. 839,096, dated Dec. 25, 1906
Patent No. 798,156, dated Aug. 26, 1905

The patents listed above cover the many points and principles tabulated below, besides others not mentioned or suggested in the enumeration.

1. The use of an independent conductor.
2. The trolley or arm carried by the car.
3. The lighting of cars by electricity.
4. The heating of cars by electricity.
5. Lighting and heating of houses with car current.
6. The conduit system of applying electricity.
7. The reversing switch on trolley cars.
8. The storage battery for running cars.
9. Telephoning and telegraphing from running cars.
10. The gearless motor on cars.
11. The porcelain motor insulation.
12. The heatless or cold motor (generator).
13. The heatless or cold dynamo.
14. The electric crane.
15. The under running trolley.

SUIT FILED AT MILWAUKEE.

From Milwaukee *Evening Wisconsin,* September 6, 1900.

Papers in suits which are intended to compel the Milwaukee Electric Railway and Light company to pay large sums in royalties have been prepared in this city, and will, it is said by the attorneys, be filed in the United States court this evening or tomorrow, immediately upon the return to the city of the plaintiff in the case.

Benson Bidwell of New York, the plaintiff in the suits, claims that he is the owner of all patents covering the transmission and use of electric power by trolley system, and for electric lighting of street cars or other vehicles or devices operated by electric power through the trolley system, and he claims the right to collect royalties from all companies using the same power and means of transmitting light. The fact that he has already secured amicable settlement with several important companies in the country, which preferred settlement to lawsuits, goes to show, the lawyers say, this his claims are based upon more than mere allegations. He also carries documents to support his claims as the inventor and proprietor of these patents, and his story of the claims is decidedly interesting. Mr. Bidwell, who is now a man about 65 years of age, says he was an invalid for seven or eight years and that while confined to his room and bed a greater part of that time, the various advancements in the electric-power system as transmitted by trolley were made, but that all were based upon his invention and that his long illness prevented him from taking up his claims as owner before this.

Recently, however, as shown by letters and newspaper articles carried by him, he has made settlements on his alleged proprietary interest in the trolley system with the Toledo, O., Consolidated Street Railway company for $10,000, the company preferring settlement out of court after the case was started; also with the Jeffries Manufacturing company of Columbus, O., which concern used a trolley-propelled vehicle in its establishment, and which paid $2,000 for the same and took out a shop license from Mr. Bidwell. A settlement was also made in Indianapolis and a suit against the electric car company in Grand Rapids, Mich., is now pending, while in New York the inventor refused a settlement with an electric car line for $100,000. In every case of suit or settlement he refuses all offers to purchase an interest in his proprietary rights, as alleged in his claims, preferring to secure all royalties for himself, and if he keeps on making settlements or winning suits and disposing of licenses to operate under his claims, he will soon be a millionaire several times over.

Inventor Bidwell left Milwaukee last evening for St. Paul, where he went to begin suit against the electric company of that city, and he expects to return to this city tomorrow to further prosecute his claim against the Milwaukee company. Under his claims as inventor and proprietor, he alleges that his invention and patents cover not only the original trolley system, but also the process by which electric cars are or can be heated and lighted by the same electric current as transmitted to the cars. In claiming royalties on his inventions, he places his nominal claim at 56 cents per day per car, which amounts to $200 per car per annum. In Milwaukee, for instance, where there are about 200 cars operated every day, he would receive about $40,000 a year in royalties if his claims are upheld here as they have been in other cities.

The patents alleged to be held and owned by Inventor Bidwell are Nos. 305,730 and 318,594, for lighting street cars; No. 152,242 for heating cars; No. 504,549 for a trolley for conduit and for overhead use; No. 517,258 for telephoning from cars, and No. 140,514 for a trolley for running trains or any other cars. These six patents and applications cover, it is alleged by the inventor, every device used on the electric car for its propulsion, lighting or heating. He claims these patents are worth untold sums of money and that he will recover every dollar alleged to be due him from the various companies in the country using them, and that he has refused, in every instance, to sell any part of his rights, and has refused many tempting propositions while sick on his back, gives all the more plausibility to his claims and prospects of success wherever he starts suits or is approached by lawyers representing the companies which desire to settle out of court. He insists that he will recover just as Mr. Welsbach, the inventor of the gas mantle light, gained nine suits against infringers; as Mr. Bell did in the Bell telephone suits, and other inventors of machinery, electric appliances, etc. His claims and possibilities are decidedly startling and novel, but they bear the stamp of success and large sums in royalties seem possible.

Bidwell's applications for patents on the electric trolley system date back as far as 1882, and from that up to 1897, when the General Electric company of New York paid him $10,000 to compromise a suit for infringement of certain of his minor patents that were being used by that company on its cars.

INFRINGEMENTS AT HARTFORD, CONN.

Hartford *Daily Times,* June 3, 1902.

Benson Bidwell and Clara Bidwell, citizens and residents of the state of Illinois, and Charles F. Bidwell, a citizen and resident of the state of Ohio, filed a bill of complaint in the United States Circuit Court today against the Hartford Street Railway Company. The complaint alleges that Benson Bidwell, before and at the time of his application for certain letters patent, was the inventor of useful inventions, methods and devices for propelling and operating cars by electricity; that said inventions were not known or patented or described in any printed publication of this or any other country for two years prior to his application for letters patent.

The complainants show that on October 15, 1901, letters patent No. 689,596 were delivered to Benson Bidwell, under the seal of the Patent Office of the United States, granting him, his heirs or assigns the exclusive right to make, use and sell the inventions throughout the United States and territories for the full term of seventeen years.

The complainants further show that by assignments, all the rights so granted to Benson Bidwell have been transferred to them, also all rights of action for infringing the patents. It is further alleged that no specimens of the inventions have been made and placed on the market by any person having a lawful right to do so, but the complainants have been prevented from making the inventions and placing them on the market by the defendant and other infringers.

The complainants allege that in 1901 and after the date of the patent, and up to the time of the commencement of this suit, the defendant did wrongfully and unlawfully make and use the invention, with intent to deprive the complainants of the royalties which they might and otherwise would have received from the sale of rights to make and use the inventions and with the intent of deriving profit from the use of the inventions so covered by the letters patent, and without the license of the complainants, and still persists in so doing, and the defendant has derived large profits and the complainants have incurred large damages.

The complainants say that unless the defendant is restrained by a writ of injunction issued by the Circuit Court, it will continue to make, use and sell numbers of specimens of the invention, and cause injury to their rights.

They ask the granting of a preliminary and also a permanent writ of injunction, directed to the Hartford Street Railway Company, enjoining it not to make, or use, or sell, or cause to be made, or used, or sold, any apparatus or device containing or employing the invention covered and secured by the letters patent, and that the defendant, by a decree of the court, may be compelled to account for and pay over to the complainants all the profits which the defendant has derived, or shall have derived, and also that the defendant be decreed to pay all damages which shall have incurred, on account of the defendant's infringement; also to pay the costs of the suit.

The complaint was filed by Charles F. Bidwell, of Toledo, Ohio, who is business manager of the patent litigation. To a *Times* reporter, this afternoon, he stated that the patent is for a pivoted swiveled, spring-pressed, under-running and lateral swinging trolley for operation of electric railways.

"My father," said Mr. Bidwell, "claims to be the inventor of the trolley system of the electric railways wherein cars are operated, lighted and heated by one current. His home is in Chicago. My father first operated cars on this system in Philadelphia and Boston in 1884 and 1885 at the electrical exhibitions held in those cities. The operation of cars is practically the same today, the only difference being larger cars, larger power houses and longer lines."

Mr. Bidwell left the city this afternoon for Boston, where he expects to institute suits against the trolley roads there. Later he will go to New York and Washington.

LIGHTING DEVICE PATENTS ALSO INFRINGED.

Grand Rapids *Herald,* January 24, 1902.

One of the most important suits ever instituted in Western Michigan was yesterday filed in the United States Circuit Court by Benson Bidwell, Clara E. Bidwell and Charles F. Bidwell against the Manistee Street Railway Company, alleging infringement on United States letters patent 689,596, issued to Benson Bidwell October 15, 1901. The patent in question pertains to the overhead trolley device now in general use throughout the country by electric railway companies, and the suit bids fair to attract national attention, inasmuch as the trolley which Mr. Bidwell claims to have invented is of the pattern now in general use everywhere, and should the case be decided for the complainants practically every electric line in the United States would be liable for an accounting and compensation for the use of the device.

In the bill of complaint Mr. Bidwell alleges that he was the first true and original inventor of the contact device for an electric vehicle, which is upwardly pressed by means of a spring and hinged and pivoted to a socketed joint so as to produce a lateral and vertical movement. The patent in question represents an application filed in the patent office by Benson Bidwell August 13, 1884, and the vital feature of the invention consists of the spring which gives the trolley wheel a uniformity of contact against the line conductor and the pivot swivel and socketed joint, which furnishes the essential unrestricted movement to the trailing arm. The complainants in their petition allege a complete and willful infringement of the patent and pray for an injunction and accounting.

The complainants now have a suit pending in the United States Court of this district against the Grand Rapids Street Railway company, alleging infringement on United States letters patent 318,594, which has for its object the illumination of an electric car, whereby the electro-motors of the car are propelled and a series of lights in the car and along the line of way are operated by the use of a single line current of electricity. The General Electric company of New York, who originally furnished the equipment for the local road, are representing the Grand Rapids Street Railway company in the above litigation, which has been of a spirited nature, covering a year and a half, during which time some of the most eminent electrical experts of the country have been testifying in the case. The lighting case, however, was closed December 10, and the records and briefs are now being prepared for final hearing at the March term of the United States Court.

There are numerous cases at St. Louis, Kansas City, Cleveland, Indianapolis, Milwaukee, Detroit and other cities, all awaiting the result of the case here, which will decide the validity or invalidity of the lighting patent.

LOOKED LIKE OLD OIL LAMPS AT CLEVELAND.

Cleveland *Plain Dealer*.

If the Big Consolidated Street Railway Company loses in a suit that was brought against it in the United States Circuit Court yesterday it will have to use oil lamps instead of electricity for lighting its cars or will have to pay big royalty for its present system of lighting.

Suit was commenced against the Big Consolidated by Charles F. Bidwell, of Toledo, alleging an infringement upon a device for lighting cars. Mr. Bidwell claims to be the sole owner of the system for the use of a single line current of electricity for propelling and illuminating cars and lights.

Mr. Bidwell claims that the Patent Office has held by its decisions that his father, Benson Bidwell, was the first and original inventor of the device set forth in his patent.

For a number of years Bidwell was prevented by sickness and lack of funds from defending his alleged rights, but now he has taken the warpath against companies that he claims are infringing on his patents. His aggregate claims for damages will foot up into the millions if he succeeds in sustaining the validity of his patents.

Benson Bidwell's story is very similar to that of many inventors. He was born in 1835, and at the age of nine years had the good fortune to meet Mr. Morse, the inventor of the telegraph, who was then young and ambitious. With him Bidwell was very much impressed and decided to study electricity. He read everything he could secure on the subject, and in 1845, when his father moved to

Toledo, secured a position as messenger boy in a telegraph office. Later he lectured on electricity, but was set down as a crank, and adversity, poverty and sickness stared him in the face. He went to Philadelphia in 1884 with scarcely enough money to buy his meals along the route, and it was not until parties in that city secured space for him in an electrical exhibition that his invention began to attract attention.

Mr. Bidwell claims that if all his devices were taken off electric cars they would have to be operated by horses or cable power and lighted by oil or candles.

TWO PATENTS INFRINGED AT KANSAS CITY.

Kansas City *Times.*

A patent right suit, involving many thousands of dollars, was brought against the Metropolitan Street Railway Company in the United States Circuit Court by Rozzelle & Walsh yesterday, representing Benson Bidwell, the well-known electrical inventor of Chicago. The street railway is charged with having infringed two of the valuable Bidwell patents for the last twelve or fifteen years, and the court is asked to compel an accounting and to grant an injunction restraining the street railway company from the further use of the inventions without the payment of a just and reasonable royalty therefor. The suit is said to be of greater magnitude and importance than any other suit ever brought against the Metropolitan Street Railway Company.

Benson Bidwell's story, as told in the voluminous petition filed in court, is the story of nearly every poor inventor who finds himself without financial means to develop his patent and place it on the market properly. Street railways, among them the Metropolitan Street Railway Company of Kansas City, took his invention, adopted and used it, saving themselves hundreds of thousands of dollars and deriving all the other benefits free of charge, and refused to pay him a cent in return. He states in his petition that he repeatedly made demands upon the street railway and was ignored. He has no means of knowing how much the gain or profit to the street railway company from the use of the inventions is, and asks the court to compel the company to make an accounting, showing just what the figures are.

HALF A MILLION INVOLVED AT ST. LOUIS.

St. Louis *Post-Dispatch,* July 2, 1901.

Through former Judge William H. Biggs, Randolph Laughlin and David Biggs, attorneys, suit was filed Monday morning in the United States Circuit Court against the St. Louis Transit Company and the United Railways Company of St. Louis, praying for a permanent injunction against the use of the trolley device whereby the electric motors are operated, and also against the use of the device whereby the cars are lighted, and asking for an accounting from the company for the use of these devices for the past six and ten years, respectively.

Should this injunction be granted, the transit company would be compelled, for a time, to cease operations, inasmuch as all the trolleys used on the cars are of the pattern the use of which is sought to be enjoined.

The complainants are Benson Bidwell and Clara E. Bidwell, his wife, of Chicago, and Charles F. Bidwell, their son, of Toledo, Ohio.

Said one of the attorneys in the case:

"We figure that the company owes the complainants, in round numbers, half a million dollars. There are about 1,300 cars in operation, and $50 a year is asked for the use of each trolley. For the lighting device 10 cents a day for each car is demanded."

BIDWELL'S EFFORTS BLOCKED FOR YEARS.

Detroit *Journal.*

Benson and Clara E. Bidwell, of Chicago, and Charles F. Bidwell, of Toledo, assignees of Benson Bidwell, are complainants in a suit brought against the Detroit Citizens' Street Railway Company yesterday in the United States Circuit Court for the infringement of a patent.

Benson Bidwell claims to be the inventor of the system for the "use of a line current of electricity for propelling and illuminating cars, transmitted from a central power station." The letters patent No. 318,594 were issued to him May 20, 1885, giving him sole right and authority to use such invention in the United States for seventeen years. He claims that the Citizens' Company propels and lights its cars by his system.

Bidwell made a hard struggle to get any attention from the street car men for his patent. They were incredulous. He claims that the General Electric Company and the Thompson-Houston Company have blocked his efforts for years trying to get patents of their own forward. Now he says he is in good health and has money back of him, and proposes to fight for his rights.

DEFRAUDED EVEN AT NATIONAL CAPITAL.

The *Evening Times,* Washington, June 27, 1902.

Benson Bidwell and Clara Bidwell, citizens and residents of the state of Illinois, and Charles F. Bidwell, a citizen and resident of the state of Ohio, filed a bill of complaint in the Supreme Court of the District of Columbia today against the Washington Traction and Electric Company. The complainant alleges that Benson Bidwell, before and at the time of his application for certain letters patent, on September 4, 1884, was the inventor of useful inventions, methods and devices for propelling and operating cars by electricity; that said inventions were not known or patented or described in any printed publication in this or any other country before his invention, nor were they known or on sale in this country for two years prior to his application for letters patent.

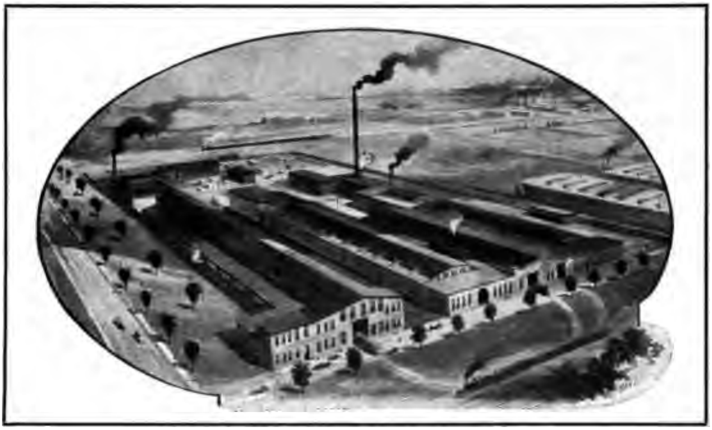
The complainants show that on September 5, 1893, letters patent No. 504,549 were delivered to Benson Bidwell, under the seal of the Patent Office of the United States, granting him, his heirs or assigns the exclusive right to make, use and sell the inventions throughout the United States and Territories for the full term of seventeen years.

INVENTION OF THE COLD MOTOR.

PART X.

Invention of the Cold Motor.

The following special correspondence, clipped from the *Courier-Herald* of Saginaw, Mich., is an authentic account of the causes leading up to and the final invention of the cold motor or generator by Prof. Bidwell. This article also gives other interesting facts in the life of Bidwell and helps to authenticate statements elsewhere made.



BIDWELL ELECTRIC COMPANY'S FACTORY.
(Chicago Heights, Ill.)

CHICAGO, June 5, 1906.—People call this the age of progress. Invention and application of new devices to the doing of old things in new and shorter ways, the superseding of all old methods by schemes for devouring time, diminishing space, saving labor and adding to our ease and luxury in the past century have been so rapid that we do well to call it so. We congratulate ourselves on the fact that we are prepared for anything to happen. All of us are loud in acclaim that there is nothing on earth the Yankee inventor cannot do. And to a remarkable extent this seems to be true. As a nation we are very optimistic concerning what we expect the future will bring forth. There are very few of us who do not believe that it is only a question of a short time before we will be traveling in the air, much as we travel now on water. We have seen such wonders in the past, commencing with the telegraph, and running all the way through the electric light, telephone, phonograph, steam railroad, trolley car, and numerous other things that we are apt to say: "If these things, why not more?" And we no more than ask the question before Marconi announces his wireless telegraph, Edison his wonderful storage battery, and now comes Benson Bidwell with his more wonderful cold motor, which is believed by scientists to be the solution of the railway problem from the electrical standpoint.

It is the purpose of this article to tell the story of this new invention and of the inventor, whose extreme modesty has prevented, for the past thirty years, his securing that measure of fame and public acclaim he was justly entitled to, notwithstanding his inventions have added more to human comfort, luxury and happiness than the work of almost any other inventor now living.

How many are there living in Saginaw today, or for that matter anywhere in this country, who could tell who was the inventor of the electric fan? Perhaps no one. The name has never been heralded abroad.

How many more could tell who invented the trolley car? Perhaps not any more than know about who invented the electric fan, and yet the whole trolley car idea was born and nearly all worked out in its details only 115 miles from Saginaw.

Now that we know the fact we feel proud of the achievements of this great Michigan idea, and yet it is possible that in the whole city of Saginaw there are not a dozen people who ever heard the name of Benson Bidwell, unless they be expert electricians.

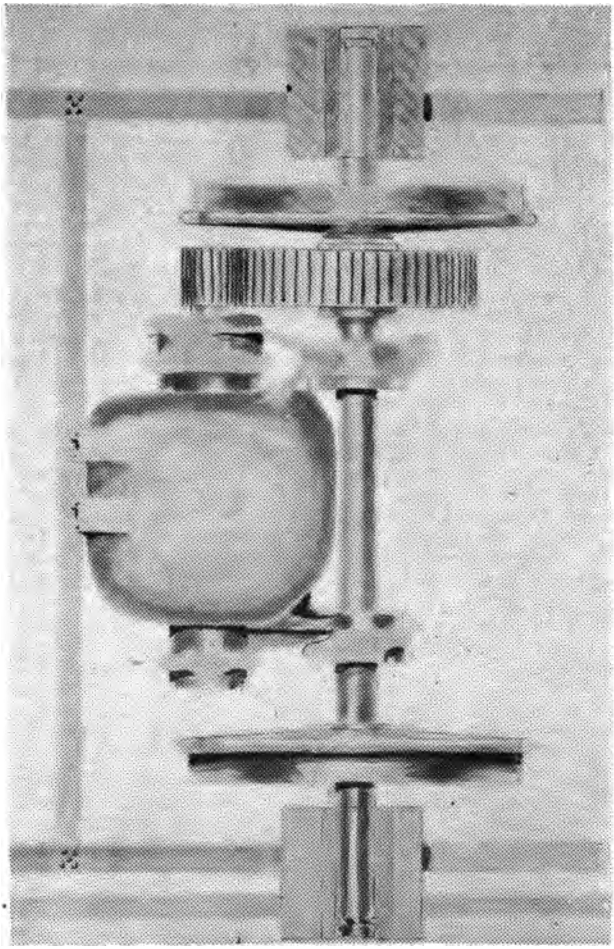
In the scientific world concerned with electricity there is no name that stands higher among men who have accomplished great things than this name, which sprang from Grand Rapids into the very first rank of America's great inventors.

Bidwell went to Grand Rapids when a very small boy, when the city was nothing but a village of small proportions in the pine forests, totally unconnected with the outside world by either telegraph or railroad. At first flush it would seem impossible that one human life could span that much of time, but one should remember that cities are built in this great, progresive West almost as by the touch of a magician's wand. Chicago is but seventy years old, is inhabited by over two million people and is the market place of perhaps twenty million more. This is progress, push, vim, go. It electrifies the very air. It becomes a part of us, and we become in ourselves concentrates of nerve, power, energy and force.

Such a condition constantly creates new demands, new necessities, new possibilities, and it is proverbial that wherever there is a demand and necessity there is invention to fill the need.

This fact is what led Bidwell to invent the trolley car, the car telephone system, and his new cold motor. The pressure of public necessity is a thing to which but comparatively few men are attuned. Bidwell is one of the great successful few.

Ever since electricity has been in commercial use there has always been a great demand for some motor or generator that would not burn out. Scientific electricians have been at work on this problem for years. They have built the motor in every conceivable way, with every conceivable metal, and tried hundreds of other schemes for preventing burning out. They have so perfected the machine that its efficiency is figured at 85 per cent, which is conceded to be about as far as human skill



HORIZONTAL VIEW OF OLD STYLE TROLLEY CAR MOTOR.
(Supported on Trucks. Readily seen to be out of date.)

will carry any piece of machinery made of senseless metal. But notwithstanding all this efficiency and perfection in detail of construction there is always the one great question left for solution: How can we prevent the burning out?

As at present made there is never any telling how quickly a motor will "short circuit," or "burn out," use whichever term you have a mind to—it all means the same thing and destroys the motor's usefulness until it can be rewound with new wires, and this is a very expensive process. Within an hour after a motor leaves the factory it may "burn out." By very careful treatment and protection it may last for years. But the difficulty is that there is no depending absolutely upon them, and it is this unreliability that has made it impossible to transform steam railroads over to electricity. It is this same unreliability that has made trolley car companies so much money-loss that they are unable to reduce fares very materially. It is this same thing that makes it cost so much to produce electricity. By far the heaviest per cent of cost and trouble centers in this one thing—this constant and unending "burning out."

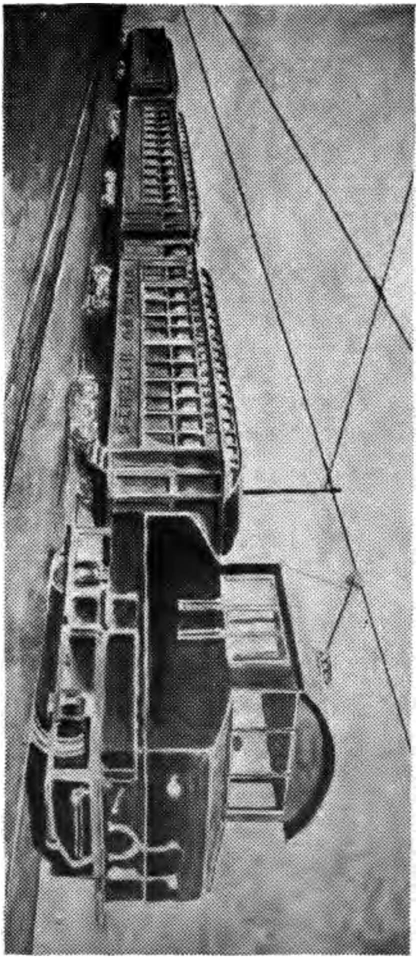
This problem was first faced by Bidwell about fifteen years ago. At that time he had completed the trolley car system. He had built a trolley car that could be run, lighted and heated by the same current for the first time in history, and had fitted it out with a polarity switch by which the motion of the car could be reversed.

After having completed the trolley car system exactly as it is run today, without a change in principle or application, Bidwell started out to solve the puzzle of preventing the constant burning out of the motors, which it was conceded on all hands was the one great drawback in the operation of the cars. He saw at once that if this could be done he could apply the motor to the present steam railway cars, because it would make them sufficiently reliable to warrant it. After studying the matter for some time he thought he had struck the right principle and applied at once for a patent. In the tests which followed he found, however, that while he was on the right road, he had not yet reached his destination, so he allowed this application for patent to lapse by reason of inattention, and it was not until some time in December of 1903 that he finally concluded that he had what he was looking for. He then made a new application for a patent and it was granted him in August of 1905.

After the patent had been applied for there followed a long period of experimenting, testing and proving, which lasted until about the first of August last, when the professor was able to announce to the world through the Chicago newspapers that he had at last solved the great problem.

The principle of refrigeration is applied directly, both to the inner surface and outer surface of the periphery of the armature. This refrigeration is in the nature of a gas, absolutely dry and cold, so applied as to prevent the motor from warming up at any point. This gas is declared to be colder by thirty degrees than ammonia, commonly used in mechanics for the manufacture of ice from water. It keeps the revolving armature so cold that it will be impossible to heat up. If it cannot heat up it cannot "burn out" or "short circuit." That is the whole thing in a nut shell.

The uses to which such a motor can be put are almost universal, but the great object Mr. Bidwell has always kept before his eyes was the running of railway trains by electricity. He is certain now that he has the machine that solves this problem.



BIDWELL'S NEW ELECTRIC LOCOMOTIVE.
(Equipped with new car wheel Axle Cold Motor.)

The next thing at hand after the solution and proving of the problem was to interest capital in the enterprise and manufacture the machines to supply the enormous demand. Notwithstanding that the professor had been one of the most successful inventors of his day he was not financially able to start a factory of his own. He had made thousands upon thousands of dollars out of his trolley car patents, but they had got him into litigation with the electric trust and he had used most of the money in the courts. This was a thing he could not prevent then, but the experience taught him a lesson by which he has profited ever since, and which will be an effectual bar to his ever getting into a similar fix again. Incidentally this is the reason the professor is so strongly set against letting millionaires or very wealthy men into his new company.

He finally secured the co-operation of several business men of integrity and also enlisted the interest of his son, Charles F. Bidwell, who was afterwards elected Secretary and General Manager. Charles F. had been associated with his father for years in his efforts and inventions and assisted in the operation of his first trolley car in Philadelphia, Pa., in 1884.

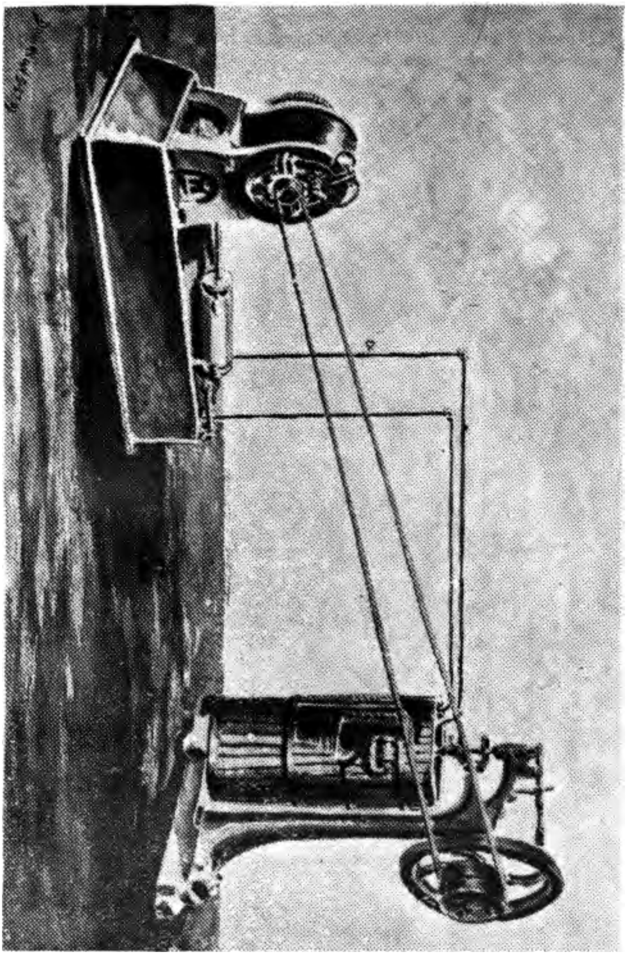
These gentlemen organized a corporation known as the Bidwell Electric company under the laws of the Territory of Oklahoma, and not long after began the manufacture of cold motors or, more properly, generators.

The cold motor is exactly the thing the great steam railroads of the country have been looking for. It will revolutionize the railway systems of the country, because it will prove to them that they can change their present mode of running trains over to electricity and run them cheaper and faster than they now do with entire safety. They will save fuel bills on any railroad at the rate of from 25 to 50 per cent, according to the time of year. Strange as it may seen, the fuel bill will grow less as the weather gets colder.

The great problem the railroads have had to face in changing their systems over to electricity has been the great cost for repairs to burned-out motors, and their unreliability on long runs, because the present motors will burn out. Any manager of a trolley road will say that motors are continually burning out, and it is very expensive to rewind and repair them. As ordinary motors are now made they could not be run 150 miles at 60 miles an hour on a straight stretch without burning out. The motors often get so hot that they melt the wires.

The Bidwell cold motor corrects all that. It absolutely prevents a motor from getting warm. The Bidwell motors can be kept at zero in the hottest weather ever known and running without stops at any rate of speed any distance. It will be possible to run trains of cars with these motors from New York to Chicago and return, or to San Francisco and return, without a minute's stop on the road and without burning out a motor or even warming it up.

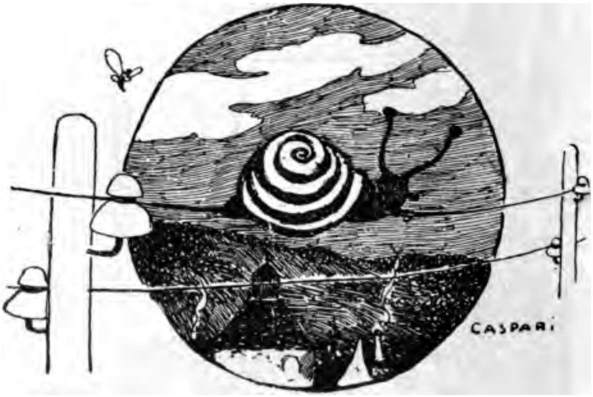
The Bidwell cold motors or generators (these words are interchangeable terms) will produce more electricity than any other kind now known. First, because they are kept cold. Second, because they can be revolved at a higher rate of speed, which means that they will produce double or more electricity per horse power in size than any other motor built, which is also because they are kept cold.



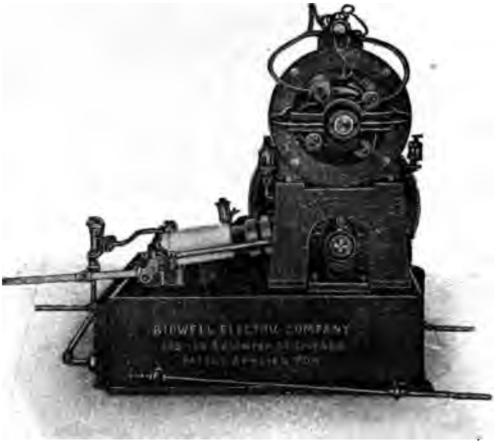
BIDWELL'S IMPROVED ICE CREAM FREEZER.
(By which cream is frozen without using ice. Can be operated at half the cost of ice. Patent applied for.)

The Bidwell cold motor will last longer than any other kind because the wires with which they are wound will not crystallize. The lives of present motors are comparatively short because in running they get hot. Every time a motor is heated and then allowed to cool the wires crystallize, or get harder just so much. The harder the wires get the less electricity they produce.

One of the greater railroad systems centering in Chicago appointed a committee to investigate Bidwell's latest great invention, with a view to equipping all its suburban lines with electricity because of the cheapness and reliability of this unique process—the cold motor.



BIDWELL'S CARBONIC GAS COMPRESSORS



FOR MAKING ICE AND ALL REFRIGERATING PURPOSES, ALSO FOR USE ON CARS TO PREVENT MOTORS BURNING OUT.

They are adapted for all conditions and places where refrigeration or ice-making is required, for cooling of rooms, for storage of perishable goods, and for the cooling of liquids and dangerous ingredients which have to be handled at fixed temperatures.

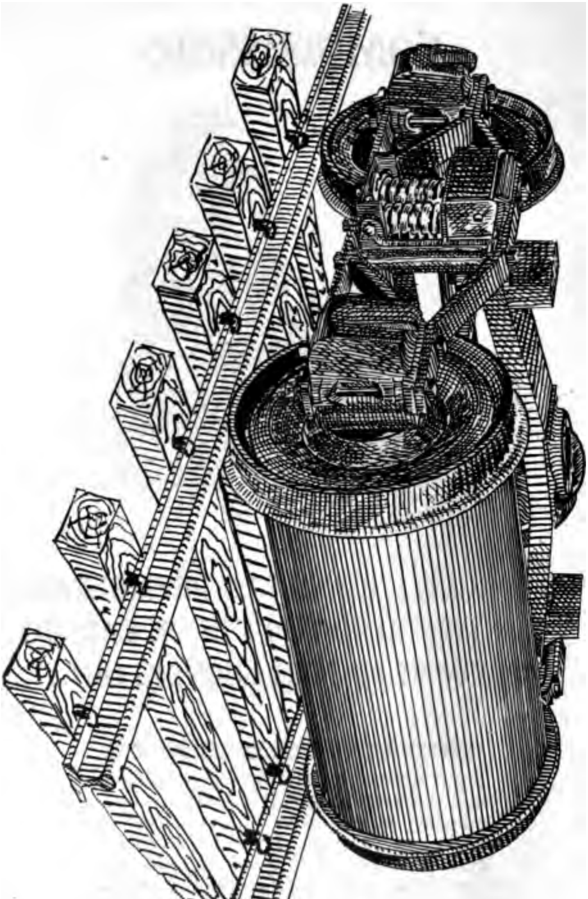
MANUFACTURED AND SOLD BY THE

BIDWELL ELECTRIC COMPANY

Offices:
403-404 Monadnock Bldg., Chicago.

Factory:
Chicago Heights, Ill.

BIDWELL'S NEW CAR WHEEL AXLE COLD MOTOR



This Motor is built between the wheels of the car to be equipped with it, making it very simple in operation and compact as to space occupied.

By taking the wheels and axles out of a car and replacing them with the Cold Motor axle and wheels the car is transformed into an electric car without further expense except connections and trolley wires.

MANUFACTURED AND SOLD BY THE

BIDWELL ELECTRIC COMPANY

Offices: 403-404 Monadnock Bldg., Chicago. Factory: Chicago Heights, Ill.

BIDWELL'S AIR COMPRESSOR

Will condense air until it has a pressure of three hundred pounds to the square inch—one hundred pounds more than can be accomplished by any other Compressor on the market.

At Riverview Amusement Park, Chicago, all through the season of 1907, it was used by the inventor of the Deep Sea Diver, who could remain under water for several hours without inconvenience in breathing by carrying on his back a cylinder of air filled by this Compressor.

The Compressor, as illustrated, is so designed that it can be operated in any position, and may be of the oscillating or rigid type.

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OFFICES:
403-404 Monadnock Bldg., Chicago.

FACTORY:
Chicago Heights, Ill.